student guide
for

ELECTRONICS TECHNICIAN CLASS "A" SCHOOL

course
A-100-0062
A-100-0063
A-100-0066

HF Transmitter/Receiver Sub-Systems

volume 3 (part 2)
AN/WRC-1B and
AN/URT-23(V)

prepared by
NETPDCD
NAVAL EDUCATION & TRAINING
PROGRAM DEVELOPMENT CENTER
DETACHMENT Great Lakes

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January 1982

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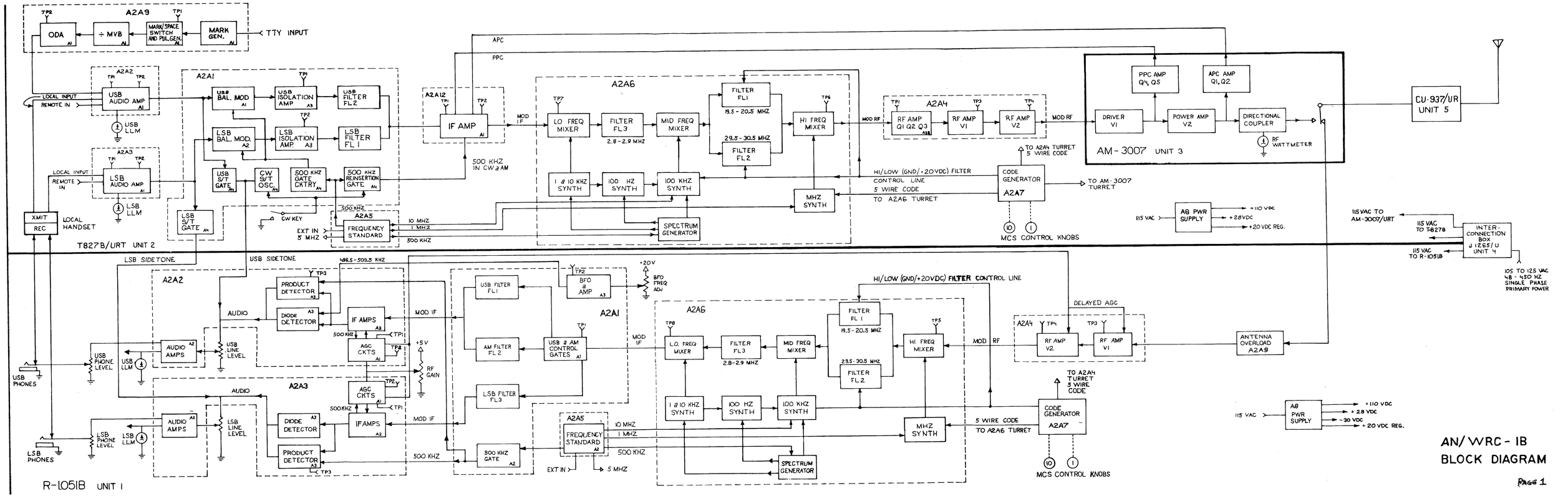
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+28VDC
+20 VDC REG.
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LSB PHONE LEVEL
LSB LLM
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+28 VDC
-30 VDC
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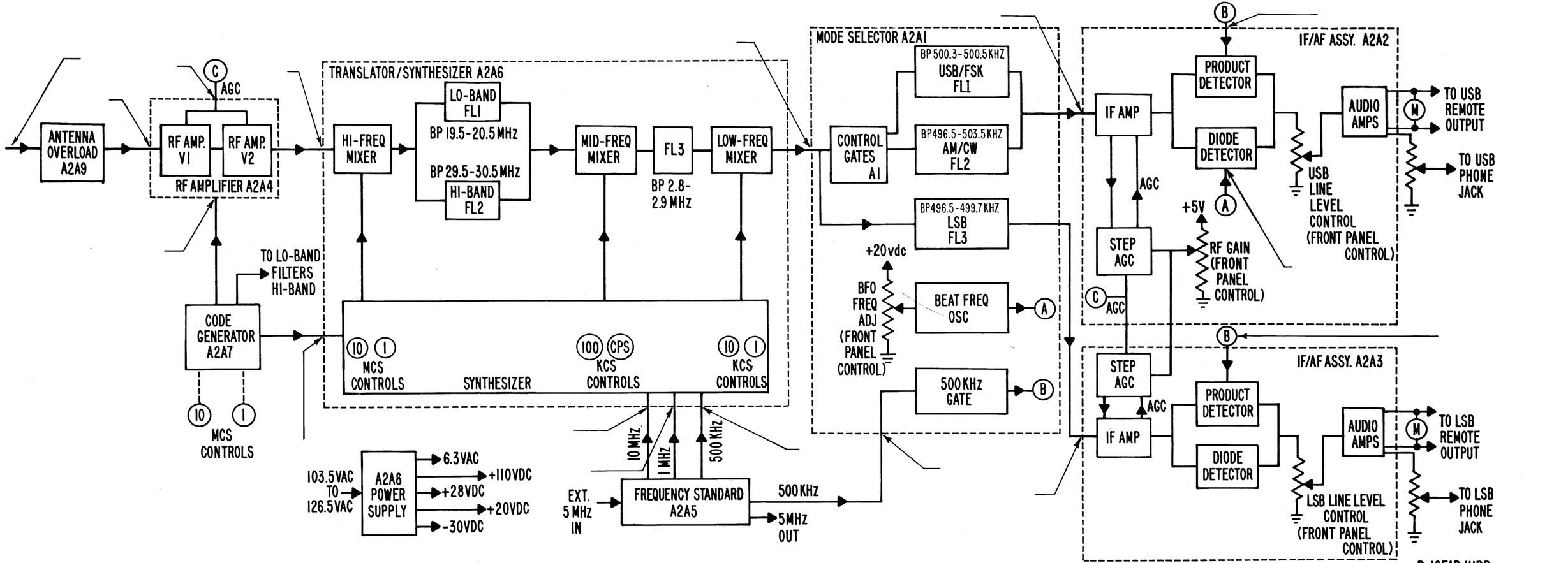


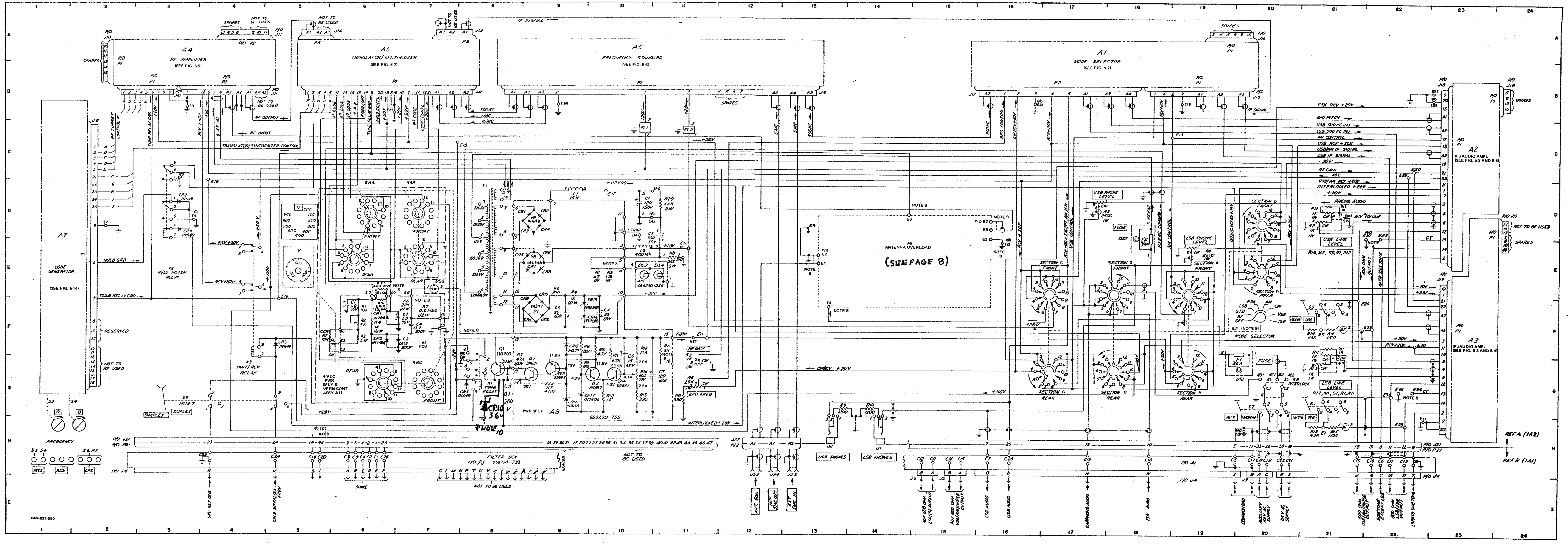
R-1051B/URR
SIMPLIFIED BLOCK DIAGRAM

PARTS LOCATION INDEX FOR A1

REF DES	LCTN	REF DES	LCTN	REF DES	LCTN	REF DES	LCTN
A1	8H, 19H	A1C9	6H	A1C18	20H	A1J3	20I
A1C1	6H	A1C10	18H	A1C19	20H	A1J4	22I, 20I, 19I, 2H
A1C2	6H	A1C11	22H, 15H	A1C20	5H	A1J5	15I
A1C3	6H	A1C12	22H, 15H	A1C21	20H	A1J6	15I
A1C4	6H	A1C13	17H	A1C22	20H	A1J23	12H
A1C5	19H	A1C14	5H	A1C23	4H	A1J24	12H
A1C6	22H	A1C15	21H, 15H	A1C24	5H	A1J25	13H
A1C7	16H	A1C16	22H, 15H	A1C25	16H	A1P21	22H, 2H
A1C8	22H	A1C17	20H	A1C26	6H	A1P22	12H

PARTS LOCATION INDEX FOR A2

A1	17A	A8R10	10F	E1	21H	J16	20A, 20B
A1P1	19A, 19B	A8R11	10G	E2	13E, 16D	J17	15B
A1P2	17B	A8R12	10G	E3	16E	J18	23B, 24B
A2	23C	A8R13	10F	E4	13F	J19	23E, 24D
A2P1	23B, 23C	A8R14	10G	E5	16D, 21F	J21	2H, 22H, 23H
A3	23F	A8R15	10G	E6	14D	J22	12H
A3P1	23D, 23F	A9	14E	E7	2D	K1	8G
A4	3A	A10	10E	E8	16E	K2	3E
A4P1	2A, 3B	A10DS3	10E	E9	3B, 13D	K3	4G
A4P2	4A, 4B	A10DS4	11E	E10	11E	L1	9D
A5	10A	A11	6G	E11	11F	L2	10E
A5P1	10B	A11A1	7F	E12	11E	M1	21H
A6	6A	A11A1C1	6F	E13	19B	M2	21F
A6P1	6B	A11A1C2	7F	E14	10D	Q1	8G
A6P2	8A	A11A1C3	7F	E15	8C	R1	21G
A6P3	5A	A11A1C4	7F	E16	5F	R2	21D
A7	1D	A11A1CR1	6F	E17	10D	R3	11G
A7P1	1E	A11A1CR2	6F	E18	4D	R4	19E
A8	9G	A11A1E1	6F	E19	19B	R5	17D
A8C3	9F	A11A1E2	6F	E20	22C	R6	11G
A8C4	10F	A11A1E3	6F	E21	16B, 22D	R7	2H
A8C6	10G	A11A1E5	7F	E22	22D	R8	11E
A8C7	11G	A11A1E6	6E	E23	22F	R9	13G
A8CR1	9D	A11A1E7	6E	E26	21F	R10	14G
A8CR2	9D	A11A1E8	7F	E27	23B	R11	21F
A8CR3	9D	A11A1E9	7F	E28	5H, 20H, 23B	R12	21D
A8CR4	9D	A11A1E10	6E	E29	22C	R13	21H
A8CR5	9E	A11A1E11	6E	E30	22F	R14	21F
A8CR6	9E	A11A1R1	6F	E31	22H	R15	21H
A8CR7	9E	A11A1R2	6F	E33	22H	R16	21F
A8CR8	9E	A11A1R3	6F	E34	22G	R17	21F
A8CR9	9F	A11A1R4	6F	E35	22G	R18	21D
A8CR10	10F	A11A1R5	6F	E36	22G	R19	11G
A8CR11	10F	A11A1R6	7F	E37	11F	R20	11D
A8CR12	10F	A11A1R7	7F	E38	6B	R21	21G
A8CR13	9F	A11DS5	7E	E39	9B	R22	21D
A8CR14	9F	A11R7	6F	E41	3C, 3D, 8G	S1	21G
A8CR15	9F	A11R23	6E	E42	10D	S2A-F	19E
A8CR16	9G	A11S6A-F	6D	E43	11D	S2A-R	19G
A8CR17	9G	A11S6A-R	6E	F1	20F	S2B-F	18B
A8Q1	9G	A11S6B-F	7D	F2	18D	S2B-R	18G
A8Q2	9G	A11S6B-R	7E	FL1	10C	S2C-F	17E
A8Q3	10G	A11S6C-F	7G	FL2	11C	S2C-R	17G
A8Q4	10G	A11S6C-R	6G	J1	14H	S2D-F	20D
A8R1	10E	C1	10D	J2	13H	S2D-R	20E
A8R2	10E	C2	10D	J8	2C	S3	1G
A8R3	9E	C3	8G	J9	13B	S4	2G
A8R4	9E	CR1	8G	J10	2A, 3B	S5	21F
A8R5	8G	CR2	3D	J11	5A, 5B	S7	20G
A8R6	11F	CR3	5F	J12	8A	S8	20G
A8R7	9G	CR4	3D	J13	8B	S9	3G
A8R8	9F	DS1	20G	J14	6A	T1	8D
A8R9	9G	DS2	18E				



NOTES:

1. REFERENCE DESIGNATIONS ARE ABBREVIATED. PREFIX THE DESIGNATIONS WITH THE UNIT NUMBER OR ASSEMBLY DESIGNATIONS OR BOTH.
2. UNLESS OTHERWISE SPECIFIED:
   a. ALL RESISTOR VALUES ARE IN OHMS ±5%.
   b. ALL RESISTORS ARE 1/4 WATT.
   c. ALL CAPACITOR VALUES ARE IN MICROFARADS.
   d. FILTER BOX FEED-THRU CAPACITORS ARE 0.001 MICROFARADS.
3. ROTARY SWITCH SECTIONS ARE SHOWN FROM REAR IN EXTREME CLOCKWISE POSITION.
4. UNLESS OTHERWISE INDICATED; VOLTAGES ARE DC (MEASURED WITH MULTIMETER AN/PSM-4).
5. [ ] INDICATES EQUIPMENT MARKING FOR OPERATOR CONTROLS.
6. TO CONNECT CENTER TAPS OF THE 600 OHM AUDIO TRANSFORMER WINDINGS TO GROUND, JUMPER E21 TO E22 AND E34 TO E35.
7. CONDITIONS FOR POSITION OF SWITCH S9:
   a. AN/WRC-1B SIMPLEX-RECEIVER KEYS OFF WHEN TRANSMITTER KEYS ON.
   b. AN/WRC-1B DUPLEX-RECEIVER REMAINS ON WHILE TRANSMITTER KEYS ON AND OFF.
   c. R-1051/URR BY ITSELF - SWITCH S9 IN DUPLEX POSITION ONLY.
8. DIFFERENCE DATA: TABLE BELOW LISTS CHANGE INFORMATION APPLICABLE TO THE MAIN FRAME CHASSIS, ASSEMBLIES, AND SUBASSEMBLIES.

EQUIP. APPLICABILITY	CHANGE REFERENCES		
	FIG.	PARA	TABLE
A2			5-3, 5-4, 5-7
A2A8		4-50, 5-25	
A2A9	5-15, 5-38	5-26	5-7
A2A11A1	5-19, 5-39	4-53	5-7

9. AS AN AID TO TRACING DC VOLTAGES AND SIGNALS THROUGH THE MODE SELECTOR SWITCH, SEE FIGURE 4-8 THRU 4-11, OR 4-16 THRU 4-21 AS APPLICABLE.

*10 FIELD CHANGE 12 CR10 FOR IMPROVED RELIABILITY OF P/S. PROTECTION OF A2 Q1.

Figure Chassis and Main Frame, Schematic Diagram

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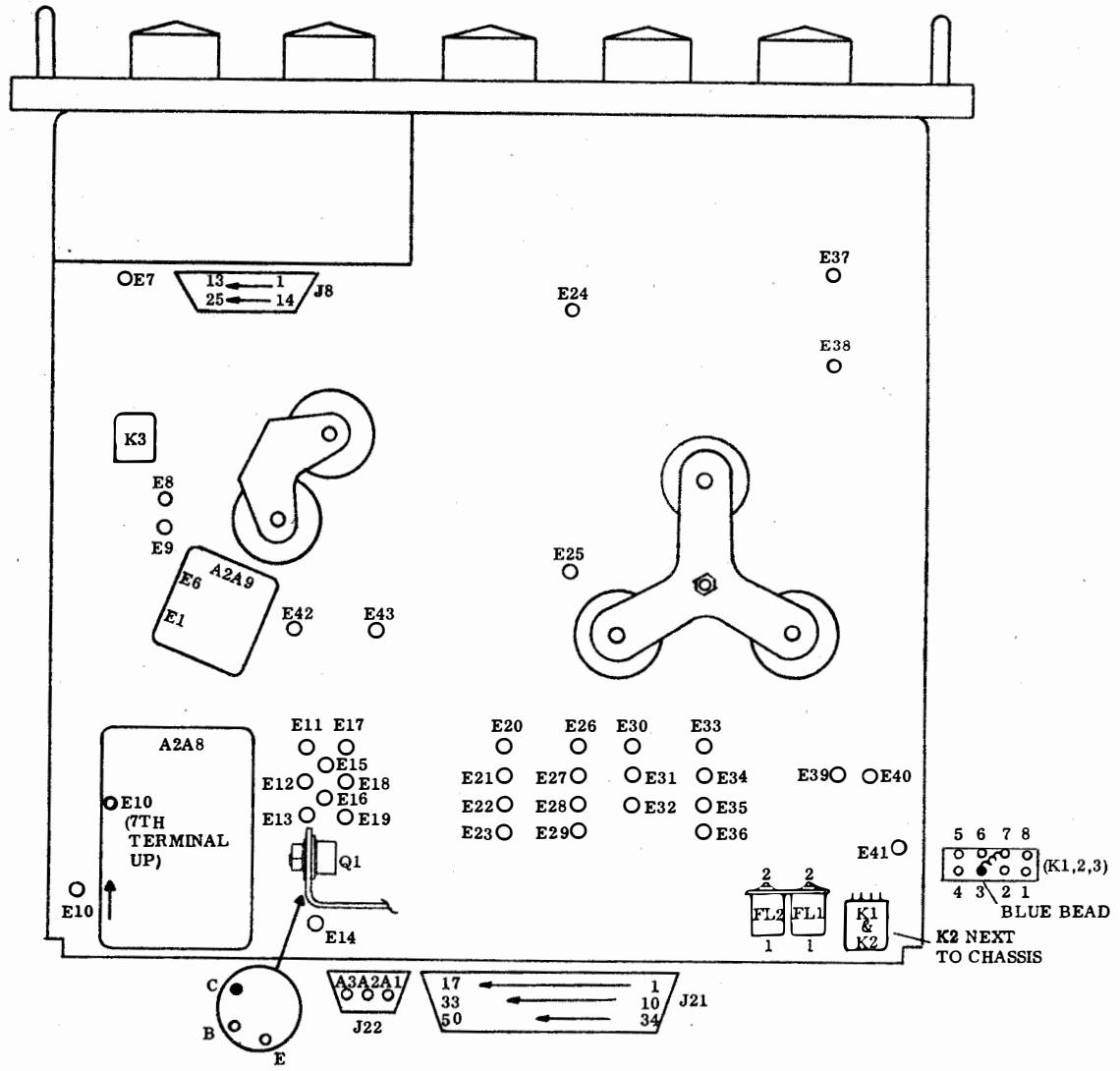


Figure Main Frame Chassis "E" Terminal and Test Point Location Diagram

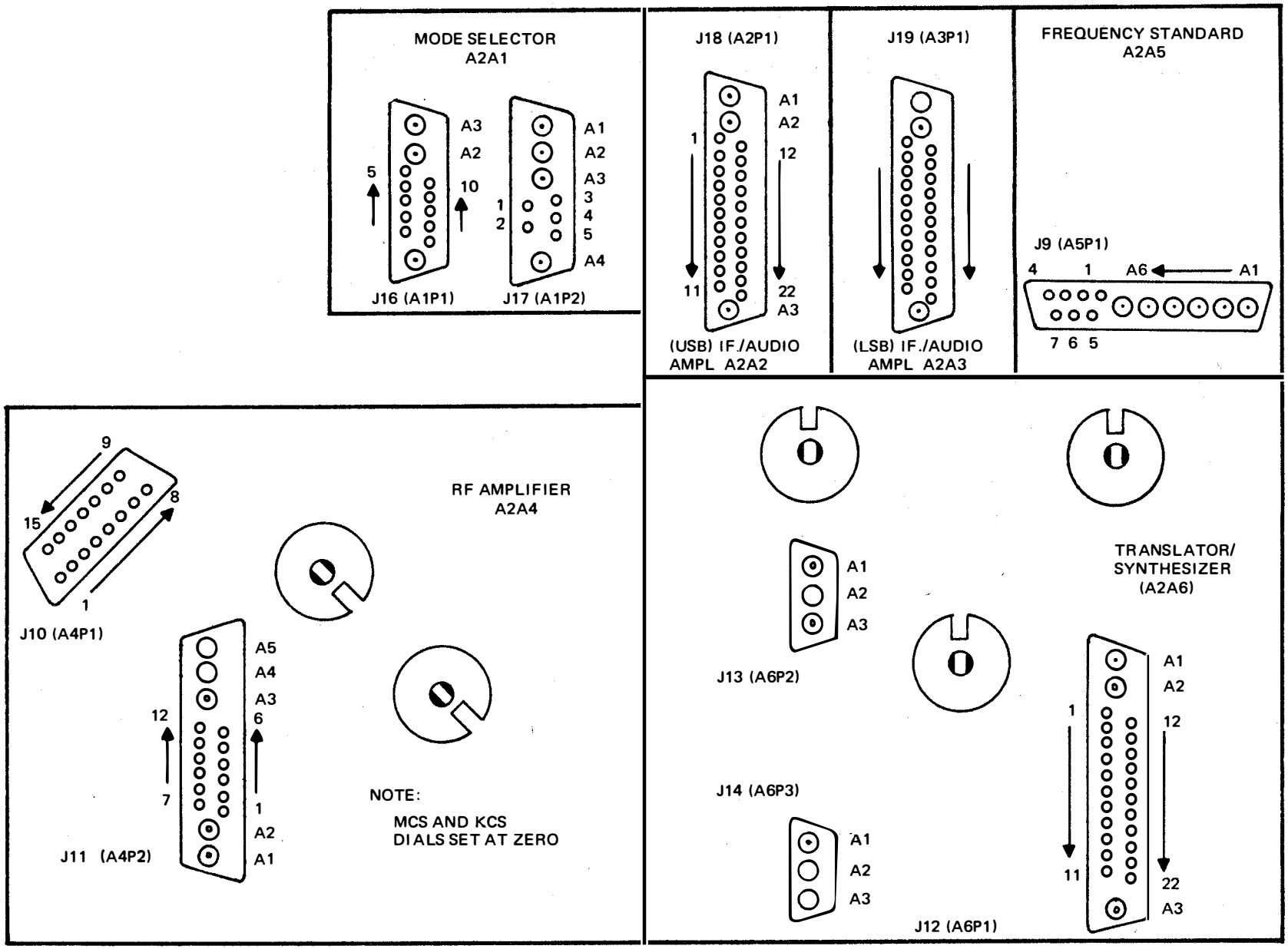


Figure Main Frame Chassis, Top View Connector Pin Location Diagram

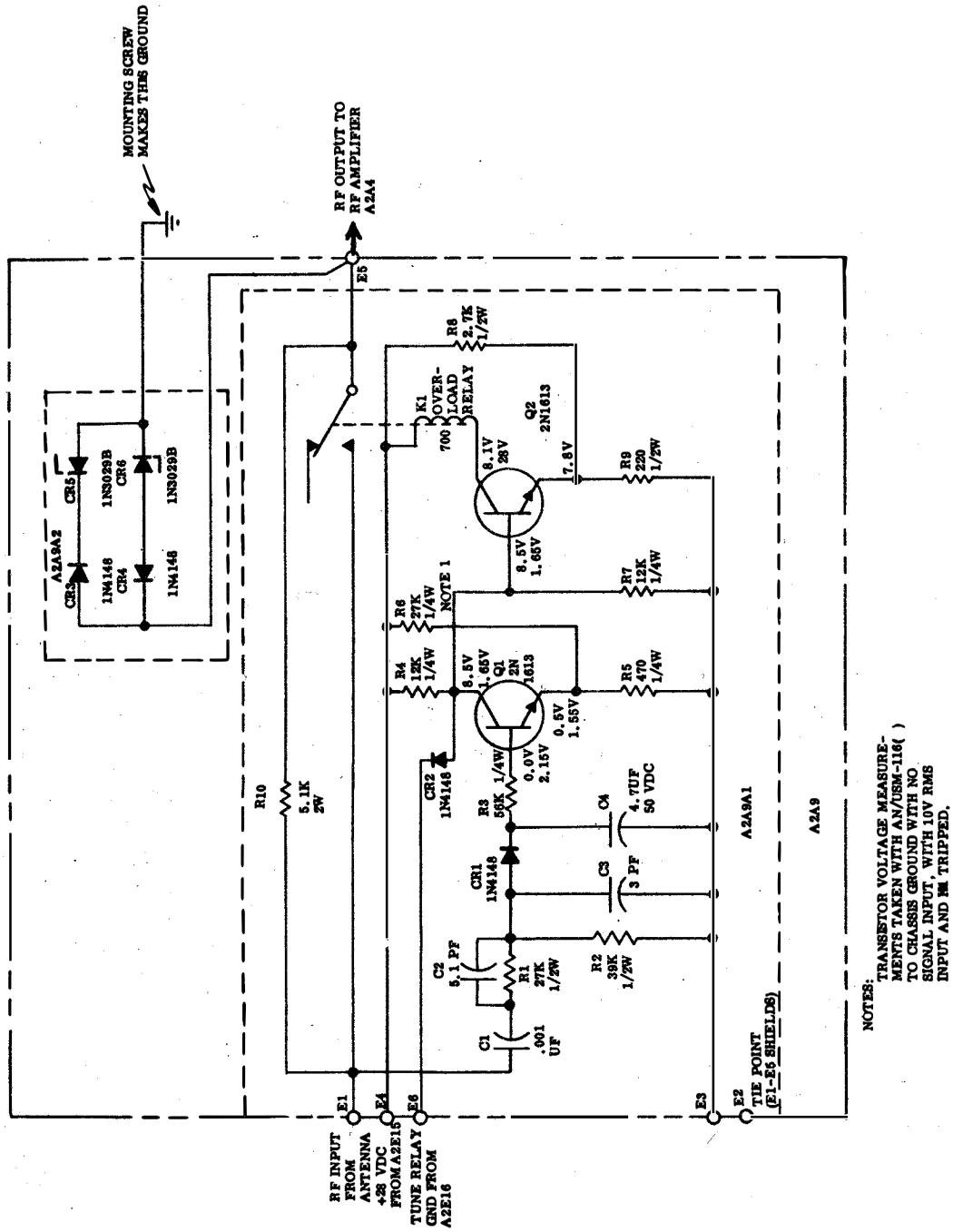


Figure Antenna Overload Assembly A2A9, Schematic Diagram

PARTS LOCATION INDEX

REF DES	LCTN	REF DES	LCTN	REF DES	LCTN	REF DES	LCTN
B1	6G	TP4	19A	A2T3	15E	A35C1	19E
C1	12B	V1	4E,13B	thru		thru	
C2	12C	V2	4E,15B	A29T3		A35C9	
C3	14B	A1C1	13C	A2T4	17A	A36C1	20C
C4	14C	A1C2	14C	thru		thru	
C5	15B	A1C3	16B	A29T4		A36C9	
C6	16C	A1R1	12C	A9Y1	11C	A37C1	19C
C7	16B	A1R2	12C	A10Y1	11C	thru	
C8	12E	A1R3	13C	A19Y1	11C	A37C9	
C9	13F	A1R4	14E	A30C1	12H	A37C10	19C
C10	14E	A1R5	15B	thru		thru	
C11	18D	A1R6	16D	A30C9		A37C19	
C12	18E	A2C1	10B	A30C10	12H	A38C1	4B
C13	19B	thru		thru		A38C2	5C
C14	20C	A29C1		A30C19		A38C3	6B
C15	3E	A2C2	10C	A31C1	13H	A38C4	6A
C16	3E	thru		thru		A38C5	6B
C17	5E	A29C3		A31C9		A38C6	7C
C18	5E	A2C3	11C	A32C1	13F	A38K1	8D
C19	12G	thru		thru		A38L1	4C
C20	12H	A29C3		A32C9		A38Q1	5B
FL1	12B	A2C4	16D	A33C1	12F	A38Q2	6B
FL2	15B	thru		thru		A38R1	4B
FL3	16A	A29C4		A33C9		A38R2	4B
K1	7G	A2C5	18A	A33C10	12F	A38R3	4B
P1	3F,3G,3H	thru		thru		A38R5	5C
P2	3A,3B,3C	A29C5		A33C19		A38R6	5B
	3D,3E,3F	A2T1	9B	A34C1	18E	A38R7	6B
	19B	thru		thru		A38R8	6B
R1	13C	A29T1		A34C9		A38R9	7B
R2	13C	A2T2	11B	A34C10	18E	A38R10	7B
R3	15C	thru		thru		A38TP1	4A
S1	5H	A29T2		A34C19		A38TP2	6A

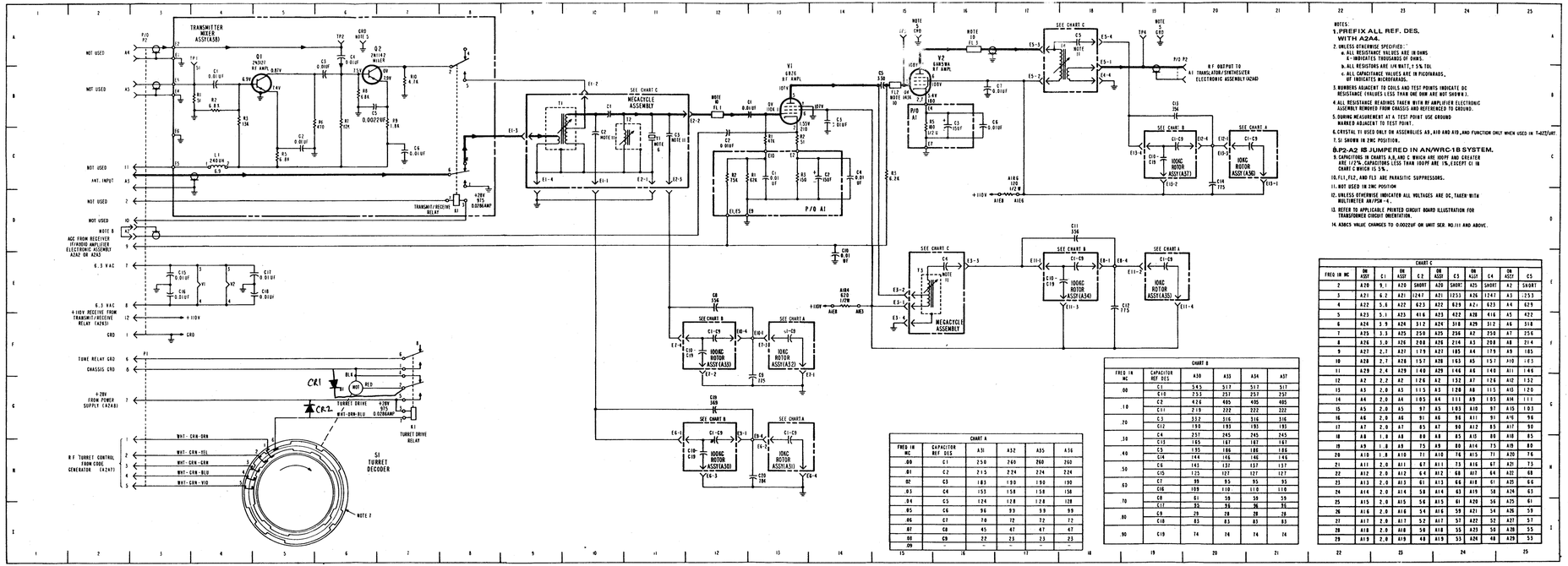


Figure RF Amplifier Assembly /A2A4 Schematic Diagram

PARTS LOCATION INDEX

REF DES	LCTN	REF DES	LCTN	REF DES	LCTN	REF DES	LCTN
B1	6G	A1C3	16B	A30C10	12H	A38C8	6B
C1	12B	A1R1	12C	thru		A38C9	7A
C2	12C	A1R2	12C	A30C19		A38C10	7B
C3	14B	A1R3	13C	A31C1	13H	A38C11	7B
C4	14C	A1R4	14E	thru		A38C12	5B
C5	15B	A1R5	15B	A31C9		A38FL1	5B
C6	16C	A1R6	16D	A32C1	13F	A38FL2	6C
C7	16B	A2C1	10B	thru		A38FL3	7C
C8	12E	thru		A32C9		A38K1	8D
C9	13F	A29C1		A33C1	12F	A38L1	5C
C10	14E	A2C2	10C	thru		A38Q1	5B
C11	18D	thru		A33C9		A38Q2	6B
C12	18E	A29C3		A33C10	12F	A38Q3	7C
C13	19B	A2C3	11C	thru		A38R1	4B
C14	20C	thru		A33C19		A38R2	4B
C15	3E	A29C3		A34C1	18E	A38R3	4B
C16	3E	A2C4	16D	thru		A38R4	5A
C17	5E	thru		A34C9		A38R5	5B
C18	5E	A29C4		A34C10	18E	A38R6	5B
C19	12G	A2C5	18A	thru		A38R7	5A
C20	12H	thru		A34C19		A38R8	4A
CR1	6G	A29C5		A35C1	19E	A38R9	5B
FL1	12B	A2T1	9B	thru		A38R10	5B
FL2	15B	thru		A35C9		A38R11	6A
FL3	16A	A29T1		A36C1	20C	A38R12	6B
K1	7G	A2T2	11B	thru		A38R13	6C
P1	3F, 3G, 3H	thru		A36C9		A38R14	6A
	3A, 3B, 3C	A29T2		A37C1	19C	A38R15	6B
	3D, 3E, 3F	A2T3	15E	thru		A38R16	6B
	19B	thru		A37C9		A38R17	6C
R1	13C	A29T3		A37C10	19C	A38R18	7B
R2	13C	A2T4	17A	thru		A38R19	7B
R3	15C	thru		A37C19		A38R20	7B
S1	5H	A29T4		A38C1	4B	A38R21	7C
TP4	19A	A9Y1	11C	A38C2	4A	A38R22	4A
V1	4E, 13B	A10Y1	11C	A38C3	4B	A38T1	7C
V2	4E, 5B	A19Y1	11C	A38C4	4A	A38TP1	4B
A1C1	13C	A30C1	12H	A38C5	6A		
A1C2	14C	thru		A38C6	6B		
		A30C9		A38C7	6C		

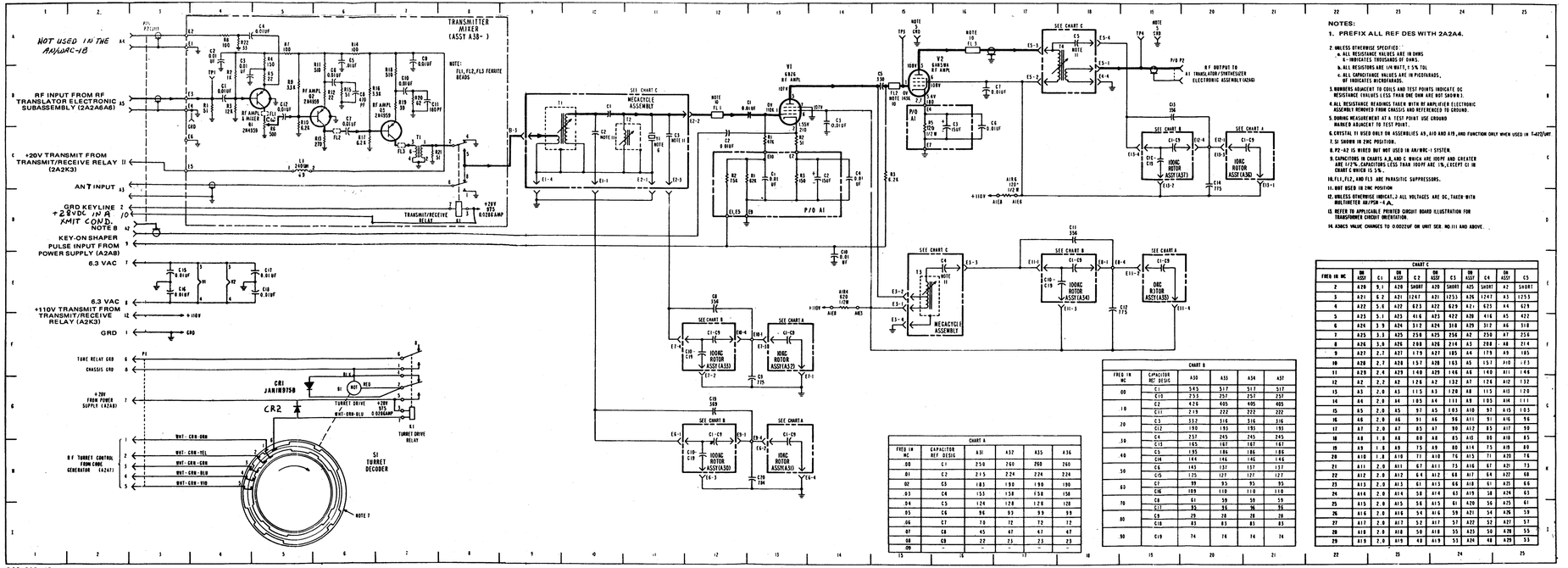
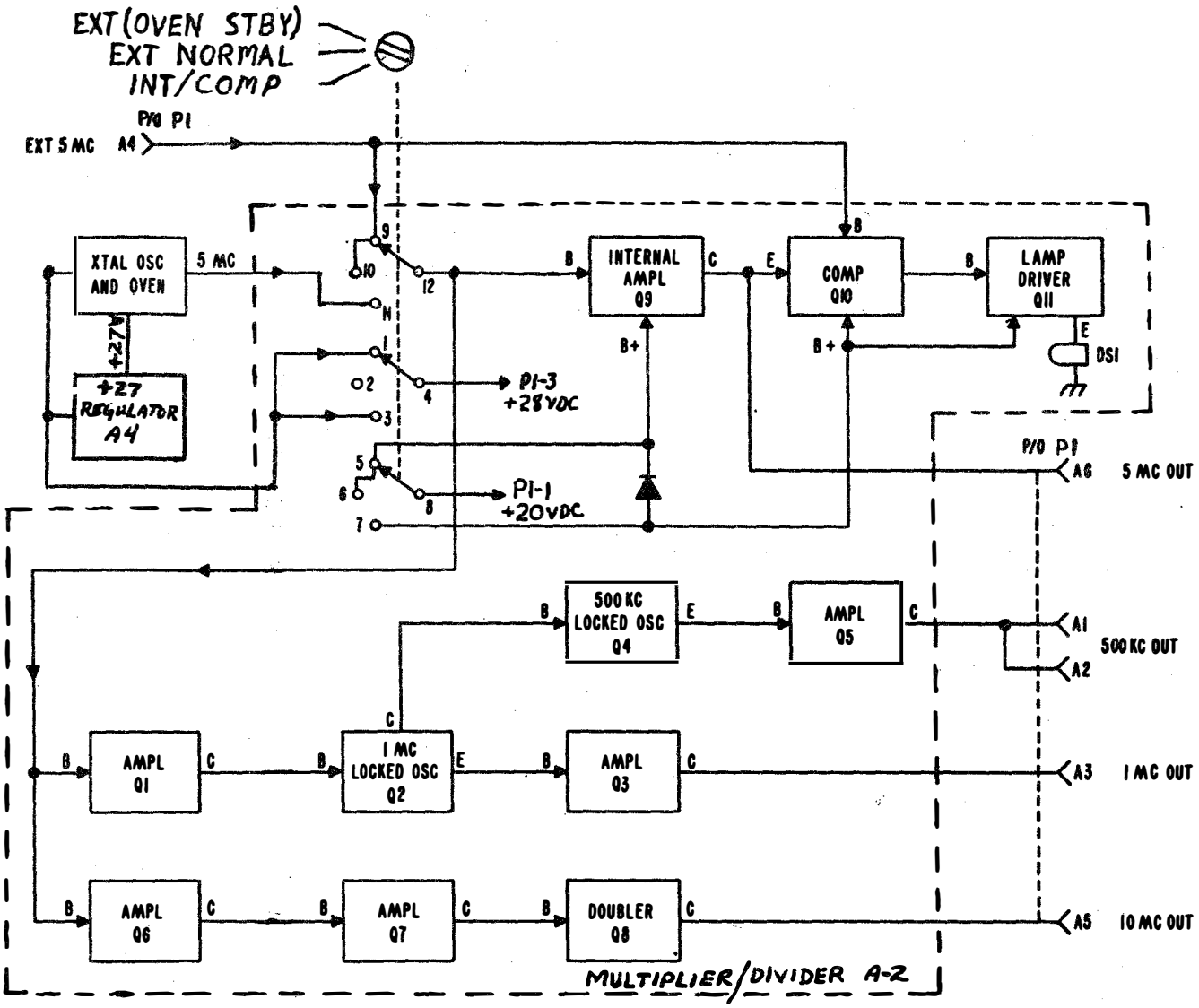
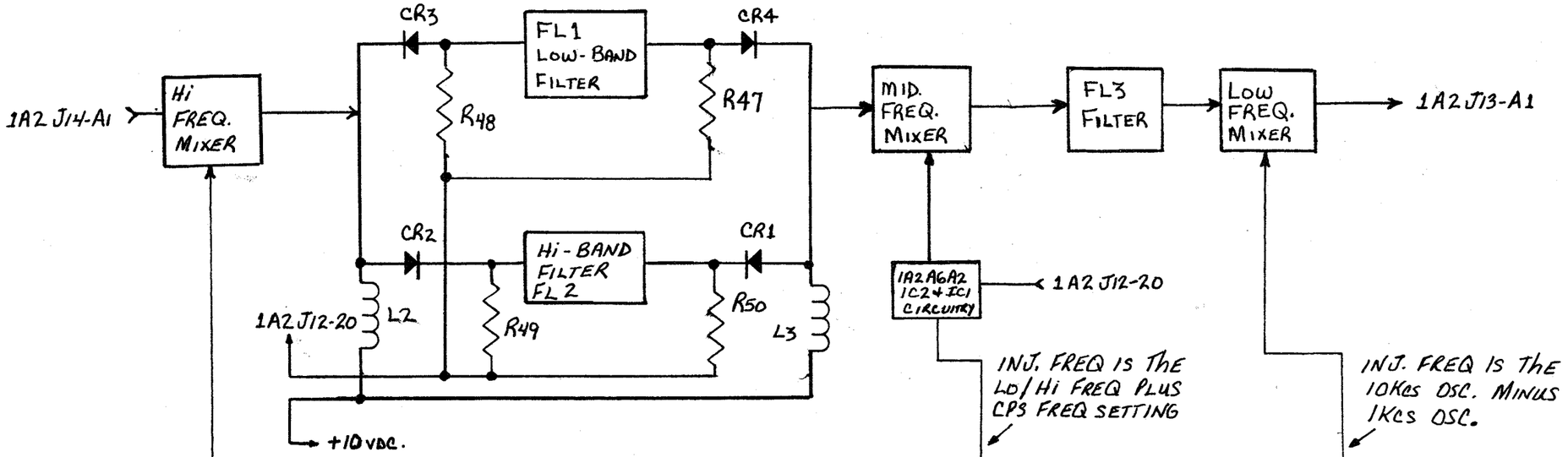


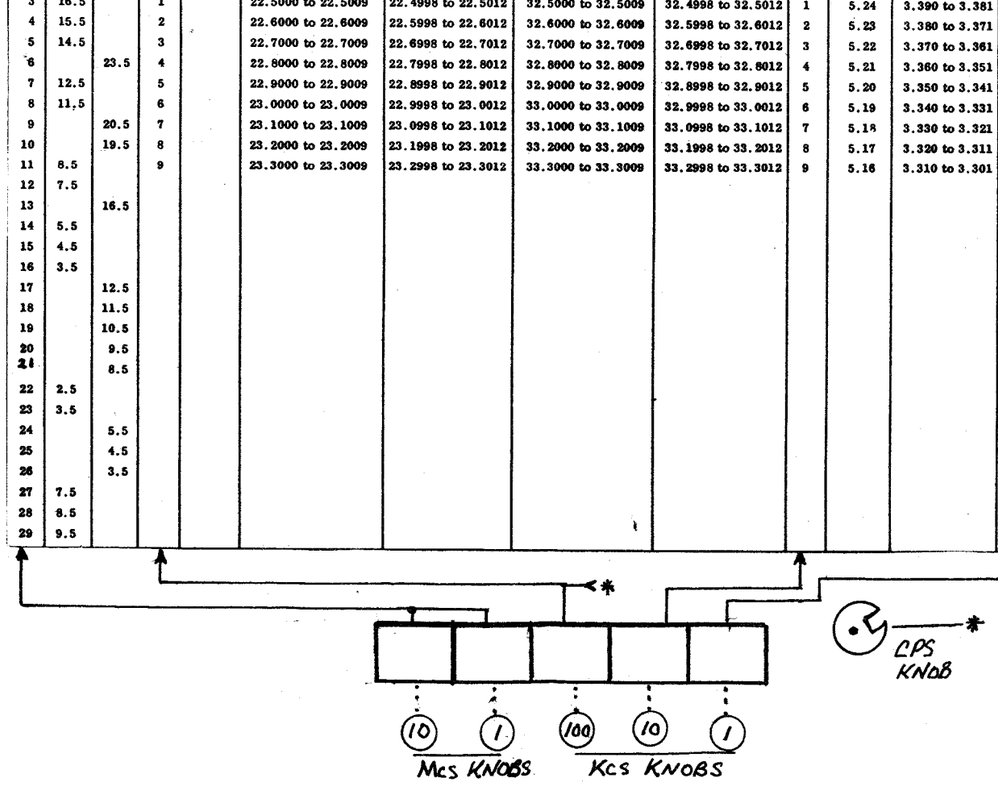
Figure RF Amplifier Assembly 2A2A4 Schematic Diagram



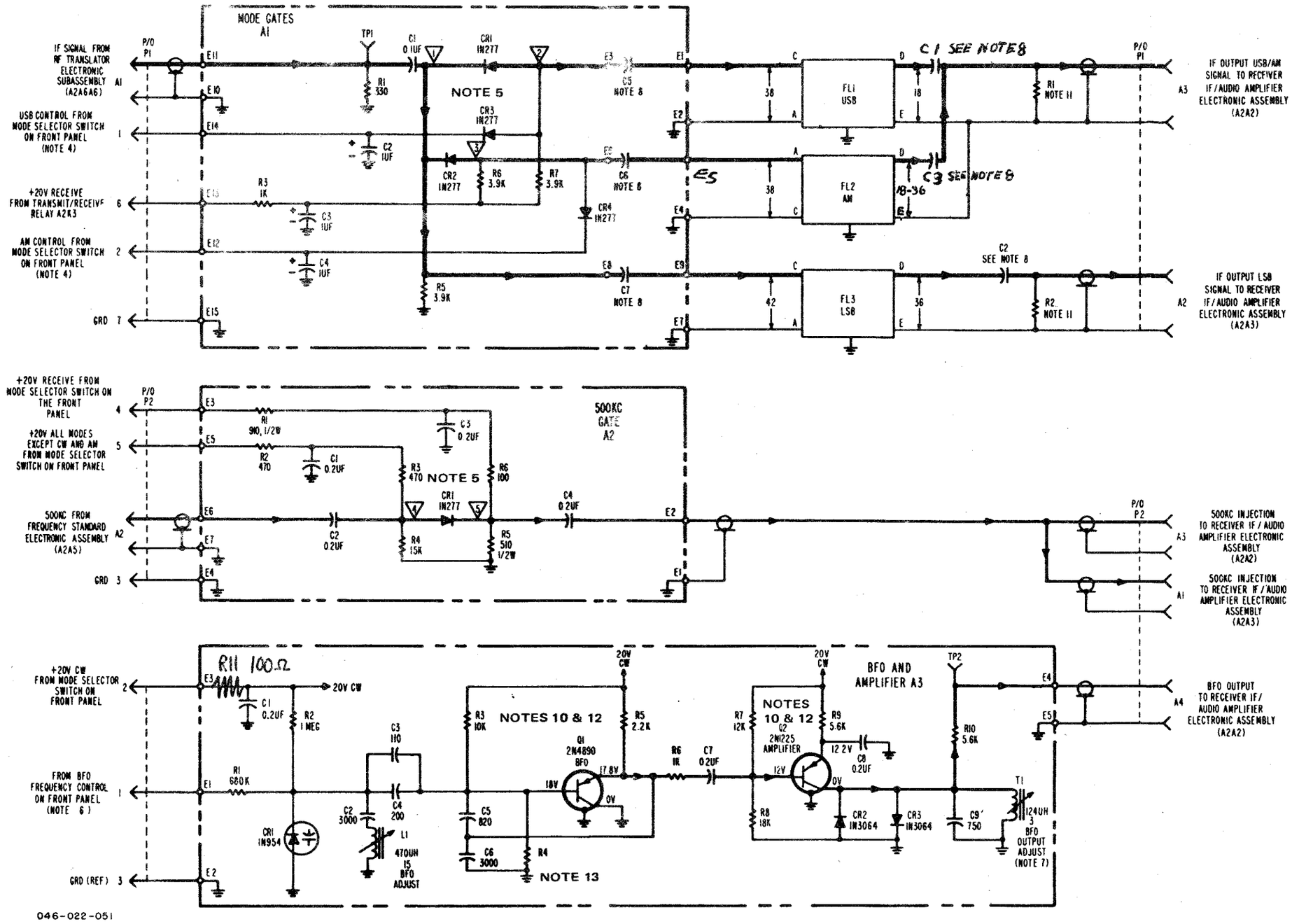
Frequency Standard, Electronic Assembly,
Servicing Block Diagram



MCS	LO	HI	100 KCS		LO 000 CPS TO 900 CPS IN 100 CPS STEPS	LO VERNIER	HI 000 CPS TO 900 CPS IN 100 CPS STEPS	HI VERNIER	10 KCS	10 KC OSC	1 and 10 KC INJ.	1 KCS	1 KC OSC
2	17.5		0		22.4000 to 22.4009	22.3998 to 22.4012	32.4000 to 32.4009	32.3998 to 32.4012	0	5.25	3.400 to 3.391	0	1.850
3	16.5		1		22.5000 to 22.5009	22.4998 to 22.5012	32.5000 to 32.5009	32.4998 to 32.5012	1	5.24	3.390 to 3.381	1	1.851
4	15.5		2		22.6000 to 22.6009	22.5998 to 22.6012	32.6000 to 32.6009	32.5998 to 32.6012	2	5.23	3.380 to 3.371	2	1.852
5	14.5		3		22.7000 to 22.7009	22.6998 to 22.7012	32.7000 to 32.7009	32.6998 to 32.7012	3	5.22	3.370 to 3.361	3	1.853
6		23.5	4		22.8000 to 22.8009	22.7998 to 22.8012	32.8000 to 32.8009	32.7998 to 32.8012	4	5.21	3.360 to 3.351	4	1.854
7	12.5		5		22.9000 to 22.9009	22.8998 to 22.9012	32.9000 to 32.9009	32.8998 to 32.9012	5	5.20	3.350 to 3.341	5	1.855
8	11,5		6		23.0000 to 23.0009	22.9998 to 23.0012	33.0000 to 33.0009	32.9998 to 33.0012	6	5.19	3.340 to 3.331	6	1.856
9		20.5	7		23.1000 to 23.1009	23.0998 to 23.1012	33.1000 to 33.1009	33.0998 to 33.1012	7	5.18	3.330 to 3.321	7	1.857
10		19.5	8		23.2000 to 23.2009	23.1998 to 23.2012	33.2000 to 33.2009	33.1998 to 33.2012	8	5.17	3.320 to 3.311	8	1.858
11	8.5		9		23.3000 to 23.3009	23.2998 to 23.3012	33.3000 to 33.3009	33.2998 to 33.3012	9	5.16	3.310 to 3.301	9	1.859
12	7.5												
13		16.5											
14	5.5												
15	4.5												
16	3.5												
17		12.5											
18		11.5											
19		10.5											
20		9.5											
21		8.5											
22	2.5												
23	3.5												
24		5.5											
25		4.5											
26		3.5											
27	7.5												
28	8.5												
29	9.5												



FREQUENCY TRANSLATION FOR THE R-1051B/URR, FUNCTIONAL BLOCK DIAGRAM.



NOTES:

1. PREFIX ALL REF DES WITH A2A1.
2. UNLESS OTHERWISE SPECIFIED:
   a. ALL RESISTANCE VALUES ARE IN OHMS K-INDICATES THOUSANDS OF OHMS
   b. ALL RESISTORS ARE 1/4 WATT ±5% TOLERANCE
   c. ALL CAPACITANCE VALUES ARE IN PICOFARADS, UF INDICATES MICROFARADS.
3. NUMBERS ADJACENT TO WINDINGS, COILS, AND TEST POINTS INDICATE DC RESISTANCE (VALUES LESS THAN ONE OHM ARE NOT SHOWN)

4

MODE	LSB	FSK	AM	CW	USB	ISB
P1-1	GRD	+20V	GRD	GRD	+20V	+20V
P1-2	GRD	GRD	+20V	+20V	GRD	GRD

5

MODE	①	②	③	④	⑤
LSB	0.22V	0.33V	0.33V	10 ± 2V	10V
FSK	7.3V	7.4V	0.33V	10 ± 2V	10V
AM	7.3V	0.33V	7.4V	0.04V	6.5V
CW	7.3	0.33V	7.4V	0.04V	6.5V
USB	7.3V	7.4V	0.33V	10 ± 2V	10V
ISB	7.3V	7.4V	0.33V	10 ± 2V	10V

6. 0.2 TO 20V PRESENT DEPENDING ON BFO FREQUENCY CONTROL POSITION.
7. A3T1 IS ADJUSTED AND SEALED AT AT THE FACTORY.
8. CAPACITANCE TO BE SELECTED AT ASSEMBLY
9. UNLESS OTHERWISE INDICATED ALL VOLTAGES ARE DC TAKEN WITH ELECTRONIC MULTIMETER AN/USM-116.
10. VOLTAGE READINGS ON A3Q1 AND A3Q2 ARE FOR CW MODE ONLY
11. RESISTANCE TO BE SELECTED AT ASSEMBLY (100—1000 OHM).
12. SOME UNITS HAVE 2N1225 AT THIS LOCATION.
13. RESISTANCE TO BE SELECTED AT ASSEMBLY (10-82K).

Figure Receiver Mode Selector Assembly A2A1, Schematic Diagram

PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
P1	2A, 2B, 2C, 2D, 2F, 2G, 2H, 2I, 23B, 23C, 23D	A1R28	21G	A2R15	9C
		A1R29	22F	A2R16	9B
		A1R30	22F	A2R17	9B
		A1RT1	9G	A2R18	10C
T1	19B	A1T1	8F	A2R19	11B
A1C1	13G	A1T2	6F	A2R20	11C
A1C2	12G	A1TP1	12E	A2R21	11B
A1C3	11G	A1TP2	14G	A2R22	11B
A1C4	8E	A2C1	3B	A2R23	12C
A1C5	9E	A2C2	5B	A2R24	13B
A1C6	3E	A2C3	5C	A2R25	13C
A1C7	8F	A2C4	6B	A2R26	14B
A1C8	8G	A2C5	6C	A2R27	14B
A1C9	7F	A2C6	7C	A2R28	14C
A1C10	6G	A2C7	7C	A2R29	15C
A1C11	5F	A2C8	8C	A2R30	15C
A1C12	21F	A2C9	7B	A2R31	16B
A1C13	22F	A2C10	9C	A2R32	16B
A1CR1	14G	A2C11	10C	A2R33	16C
A1CR2	13F	A2C12	10B	A2R34	17B
A1CR3	13F	A2C13	11C	A2R35	17B
A1CR4	10G	A2C14	11C	A2R36	17C
A1CR5	9F	A2C15	12B	A2R37	19B
A1Q1	14F	A2C16	13C	A2R38	6B
A1Q2	13F	A2C17	14C	A2T1	5C
A1Q3	12F	A2C18	14B	A2T2	8C
A1Q4	11F	A2C19	15C	A2T3	10C
A1Q5	10E	A2C20	16C	A2T4	12C
A1Q6	10F	A2C21	16B	A2T5	17B
A1Q7	7F	A2C22	17C	A3C1	17E
A1Q8	5F	A2C23	17C	A3C2	17F
A1Q9	22F	A2C24	18D	A3C3	17F
A1R1	14F	A2C25	4B	A3C4	17G
A1R2	14G	A2C26	15C	A3C5	19F
A1R3	14E	A2CR1	6C	A3C6	20G
A1R4	14F	A2L1	4A	A3C7	20G
A1R5	13G	A2Q1	4B	A3CR1	19E
A1R6	13G	A2Q2	6C	A3CR2	20F
A1R7	13F	A2Q3	7B	A3L1	19G
A1R8	13E	A2Q4	7C	A3Q1	17F
A1R9	12G	A2Q5	9C	A3Q2	17F
A1R10	12E	A2Q6	11C	A3Q3	19F
A1R11	12F	A2Q7	15C	A3R1	17E
A1R12	11G	A2Q8	16C	A3R2	17E
A1R13	10E	A2Q9	18B	A3R3	17G
A1R14	10F	A2Q10	18C	A3R4	17G
A1R15	9G	A2R1	4B	A3R5	19F
A1R16	9G	A2R2	4C	A3R6	20F
A1R17	9E	A2R3	5B	A3T1	18F
A1R18	7E	A2R5	5B	A3TP3	16E
A1R19	8E	A2R6	6C		
A1R20	7E	A2R7	6C		
A1R21	7F	A2R8	6B		
A1R22	5E	A2R9	7C		
A1R23	4F	A2R10	7B		
A1R24	5G	A2R11	7C		
A1R25	5G	A2R12	8B		
A1R26	4G	A2R13	8C		
A1R27	21F	A2R14	9B		

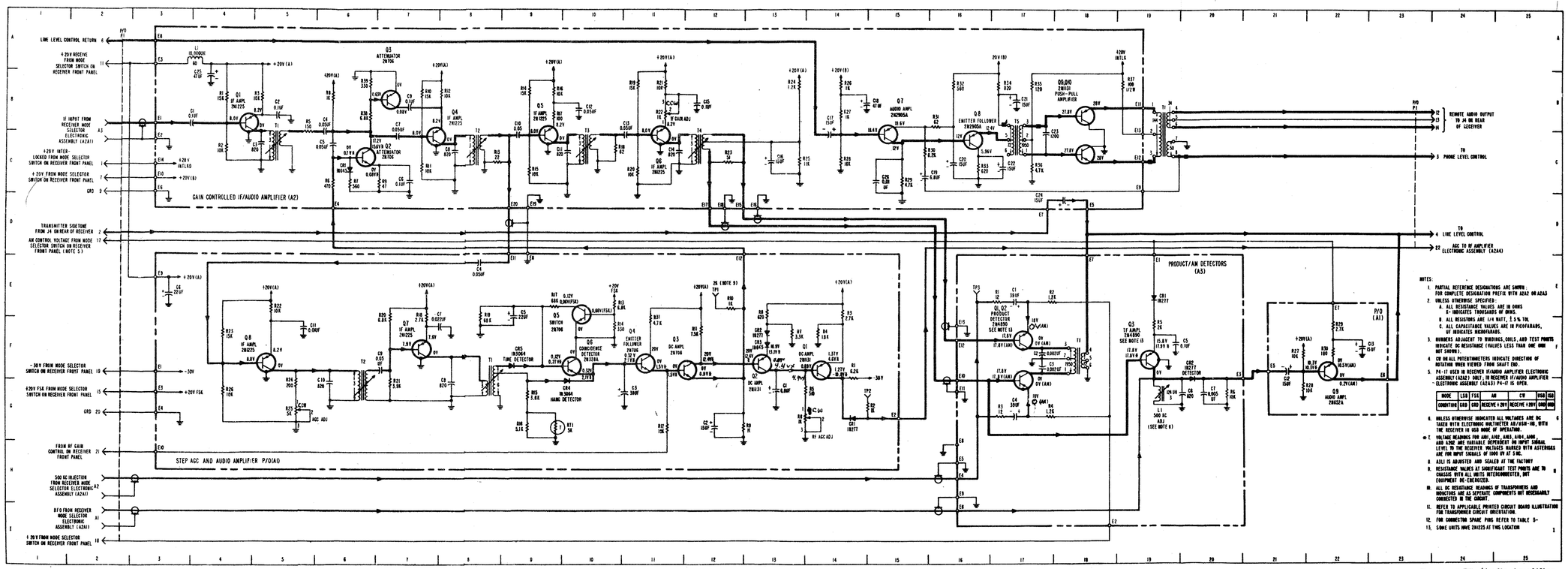
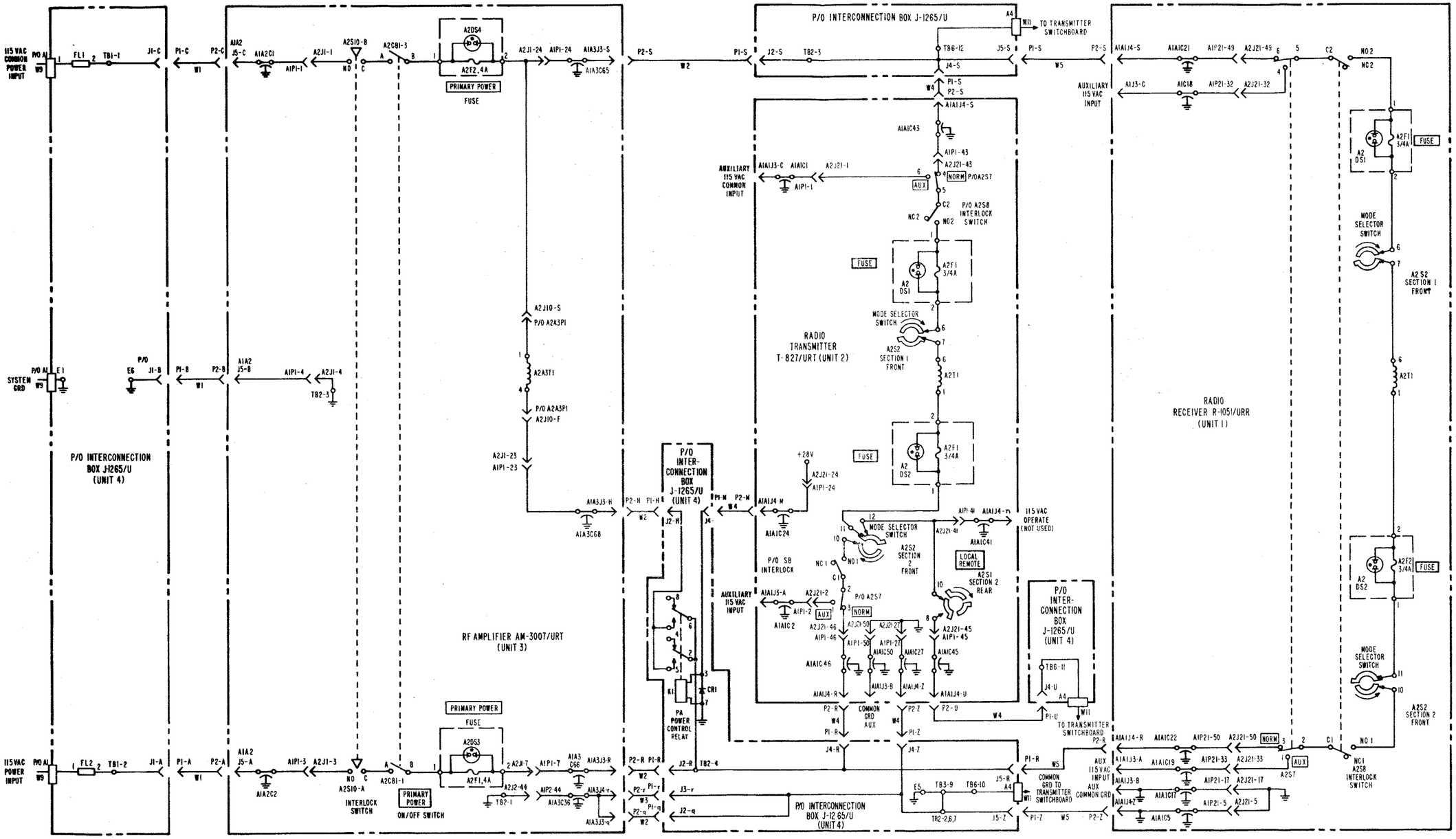
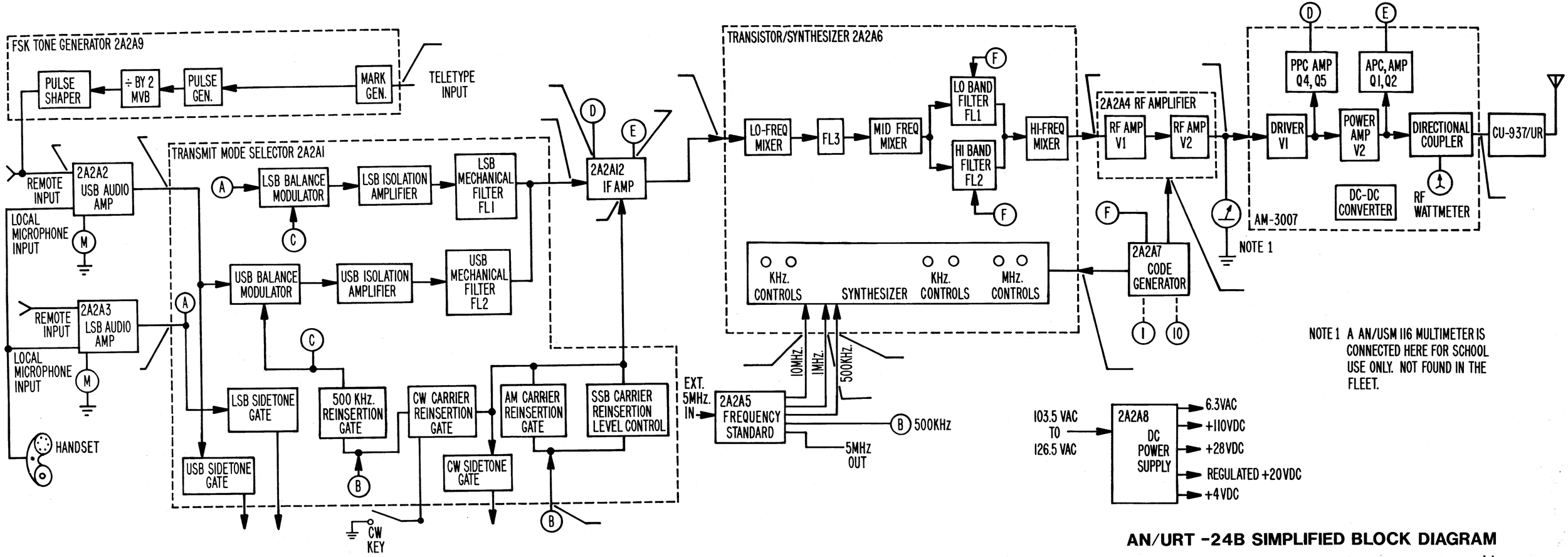


Figure Receiver IF./Audio Amplifier Electronic Assembly, Schematic Diagram



NOTES:
1. PREFIX ALL REFERENCE DESIGNATIONS WITH THE APPLICABLE UNIT NUMBER.
2. ALL FEED-THROUGH CAPACITORS ARE 0.001 UF.
3. ALL SWITCHES ARE SHOWN IN THE OFF OR EXTREME CCW POSITION UNLESS OTHERWISE INDICATED.
4. POWER REQUIREMENTS - AN/WRC-1:
   a. VOLTAGE - 115VAC ± 10% SINGLE PHASE
   b. FREQUENCY - 48 TO 450 CPS
   c. POWER - STAND-BY (ALL UNITS) 140 WATTS
      ON AND KEYED, 50 WATTS OUTPUT (CW) - 375 WATTS
5. [ ] INDICATES EQUIPMENT OPERATION MARKINGS (FRONT PANEL CONTROL)

Figure Radio Set AN/WRC-1, Primary Power Distribution, Schematic Diagram



NOTE 1 A AN/USM 116 MULTIMETER IS CONNECTED HERE FOR SCHOOL USE ONLY. NOT FOUND IN THE FLEET.

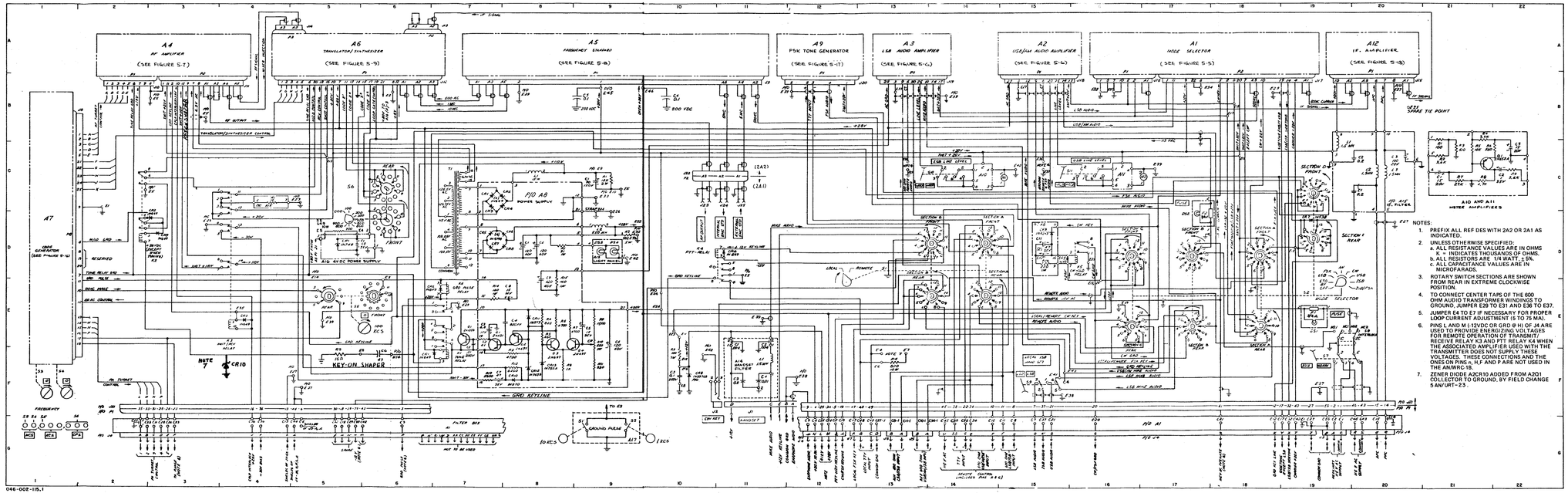
AN/URT -24B SIMPLIFIED BLOCK DIAGRAM

PARTS LOCATION INDEX FOR 2A1

REF DES	LCTN	REF DES	LCTN	REF DES	LCTN	REF DES	LCTN
A1C1	19G	A1C14	20G	A1C29	5G	A1C44	5G
A1C2	19G	A1C15	20G	A1C30	5G	A1C45	14G
A1C3	6G	A1C16	4G	A1C31	3G	A1C46	20G
A1C4	12G	A1C17	19G	A1C32	19G	A1C47	12G
A1C5	12G	A1C18	5G	A1C33	5G	A1C48	13G
A1C6	5G	A1C19	12G	A1C34	14G	A1C49	13G
A1C7	15G	A1C20	16G	A1C34-1	13G	A1C50	19G
A1C8	15G	A1C21	15G	A1C35	2G	A1J3	19G
A1C8-1	13G	A1C22	14G	A1C36	4G	A1J4	2G, 12G, 17G, 20G
A1C9	12G	A1C23	3G	A1C37	15G	A1J5	13G
A1C10	14G	A1C24	12G	A1C38	14G	A1J6	13G
A1C10-1	13G	A1C25	12G	A1C39	5G	A1J7	12G
A1C11	15G	A1C26	3G	A1C40	19G	J23	19C
A1C11-1	13G	A1C27	19G	A1C41	18G	J24	11C
A1C12	18G	A1C27-1	13G	A1C42	6G	J25	11C
A1C13	4G	A1C28	3G	A1C43	20G	P1	2F, 20F

PARTS LOCATION INDEX FOR 2A2

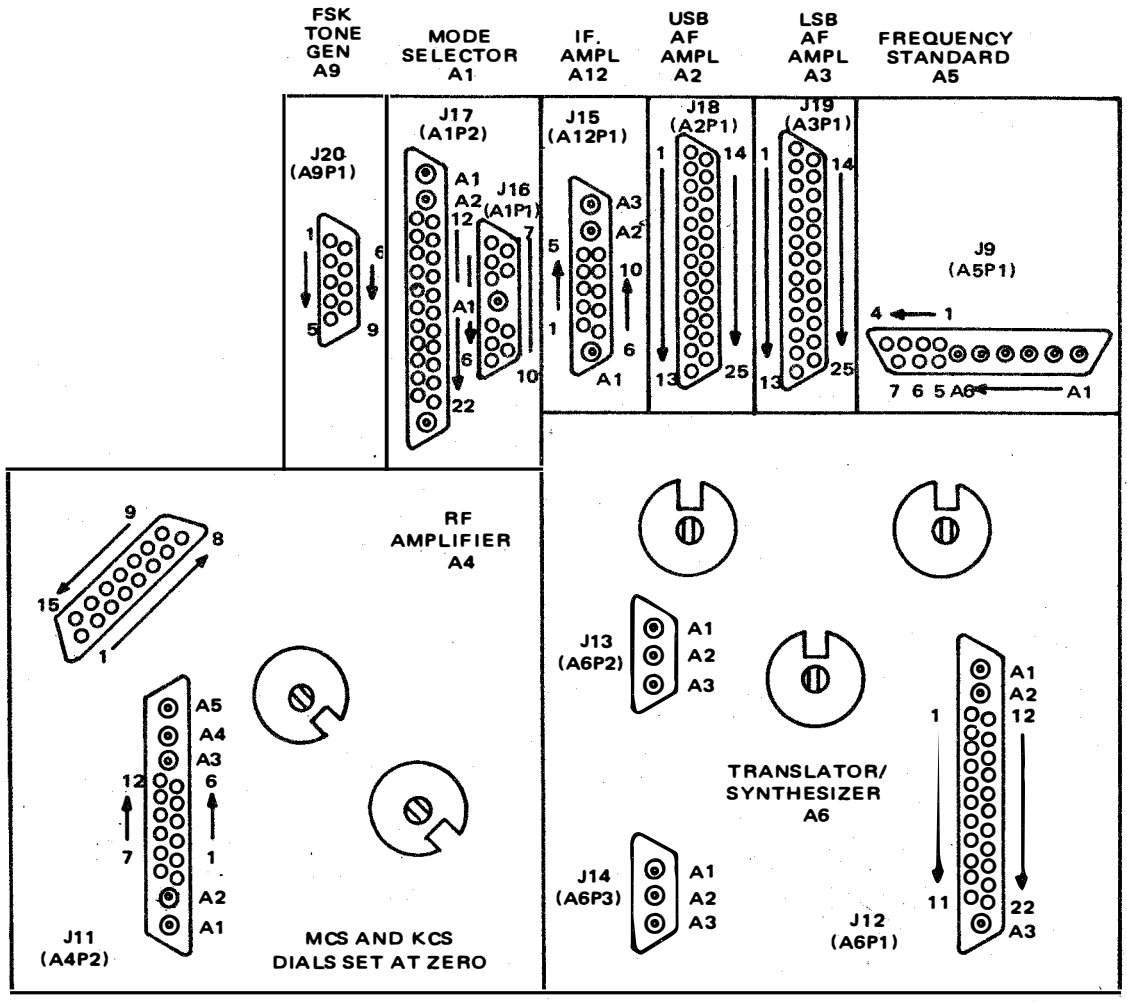
A1	17A	A9R13	7F	C3	10F	E45	9B
A1P1	16B	A9R14	7E	C4	10B	E46	9B
A1P2	18B	A9R15	8E	C5	9B	F1	19E
A2	15A	A9R16	15D	CR1	7F	F2	17D
A2P1	15B	A9	12A	CR2	3D	J1	11F
A3	13A	A9P1	12B	CR3	4E	J2	10F
A3P1	13B	A10	14C	CR4	11D	J5	3B
A4	3A	A10C1	21C	CR5	15D	J9	11B
A4P1	2B	A10C2	22C	CR6	7E	J10	3B
A4P2	3B	A10C3	22C	CR7	19D	J11	4B
A5	9A	A10Q1	21C	CR8	10F	J12	7B
A5P1	9B	A10R1	21C	CR9	3D	J13	7A
A6	5A	A10R2	21C	CR10	7F	J14	5A
A6P1	6B	A10R3	21C			J15	20B
A6P2	6A	A10R4	21C	DS1	19E	J16	17B
A6P3	5A	A10R5	21C	DS2	17D	J17	19B
A7	1D	A10R6	22C	E1	2C	J18	16B
A7P8	1D	A10R7	21C	E2	6B	J19	14B
A8	8C, 15D	A10R8	21C	E3	6E	J20	13B
A8C1	8D	A10R9	22C	E4	13F	J21	2F
A8C2	8D	A11	16C	E5	2C, 3B, 9C, 11D	J22	10C
A8C3	7E	A11C1	21C	E6	13F	K1	7F
A8C4	8E	A11C2	22C	E7	13F	K2	2D
A8C5	9E	A11C3	22C	E8	10F	K3	4E
A8C6	9E	A11Q1	21C	E9	9C	K4	11D
A8C7	7F	A11R1	21C	E10	9C	K5	16D
A8C8	8E	A11R2	21C	E11	10E	K6	7E
A8C9	8E	A11R3	21C	E12	10F	L1	8C
A8C10	15D	A11R4	21C	E13	5C, 18C	L2	9D
A8C11	15D	A11R5	21C	E14	5D	M1	15C
A8CR1	7C	A11R6	22C	E15	19D	M2	17C
A8CR2	8C	A11R7	21C	E16	10F	Q1	7E
A8CR3	7C	A11R8	21C	E17	18B	R1	9C
A8CR4	8C	A11R9	22C	E18	18B	R2	9D
A8CR5	7D	A12	20A	E19	16E	R3	10F
A8CR6	8D	A12P1	20B	E20	16E	R4	13F
A8CR7	7D	A13	9D	E21	16D	R5	5D
A8CR8	8D	A13DS1	9D	E22	9D	R6	5F
A8CR9	15D	A13DS4	9D	E23	10E	S1-1-F	14D
A8CR10	8F	A14	11F	E24	10E	S1-1-R	14E
A8CR11	8E	A14C1	11E	E26	9C	S1-2-F	14D
A8CR12	8F	A14C2	11E	E27	5C, 5F, 15B, 20B, 20D	S1-2-R	14E
A8CR13	8F	A14C3	11F	E28	16B	S1-1-F	18D
A8Q1	7E	A14C4	11F	E29	3D, 7E, 8B, 13C, 15B	S2-1-R	18E
A8Q2	8E	A14L1	11F	E30	16B	S2-2-F	17D
A8Q3	8E	A15	4C, 20C	E31	13C	S2-2-R	17E
A8Q4	8E	A15C1	20C	E32	9D	S2-3-F	16D
A8R1	8D	A15C2	20C	E33	9C, 11E, 12B	S2-3-R	16E
A8R2	7E	A15C3	20C	E34	17B	S2-4-F	19C
A8R3	8F	A15L1	19C	E35	4E	S2-4-R	19D
A8R4	8E	A15L2	20C	E36	15C	S3	1F, 1G
A8R5	8E	A15L3	20C	E37	5F, 13B, 15C, 19F	S4	1F, 1G
A8R6	8E	A15R1	4C	E38	12F, 15F	S5	1G, 5E, 6E
A8R7	8F	A16	5D	E39	5E, 14B, 16E, 17C	S6	1G, 6C, 6D
A8R8	8F	A16C1	5D	E40	15C	S7	19F
A8R9	9E	A16CR1	5D	E41	15F	S8	20E
A8R10	9E	A17S1	9G	E42	9D, 10F	S9	15F
A8R11	9F	A17S2	9G	E43	15F	S10	14C
A8R12	8F	C1	9C	E44	9C	S11	15C
		C2	7E			T1	7C



NOTES:

1. PREFIX ALL REF DES WITH 2A2 OR 2A1 AS INDICATED.
2. UNLESS OTHERWISE SPECIFIED:
   a. ALL RESISTANCE VALUES ARE IN OHMS K = INDICATES THOUSANDS OF OHMS.
   b. ALL RESISTORS ARE 1/4 WATT, ± 5%.
   c. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
3. ROTARY SWITCH SECTIONS ARE SHOWN FROM REAR IN EXTREME CLOCKWISE POSITION.
4. TO CONNECT CENTER TAPS OF THE 600 OHM AUDIO TRANSFORMER WINDINGS TO GROUND, JUMPER E28 TO E31 AND E38 TO E37.
5. JUMPER E4 TO E7 IF NECESSARY FOR PROPER LOOP CURRENT ADJUSTMENT IS TO 75 MA).
6. PINS L AND M (-12VDC OR GRD @ H) OF J4 ARE USED TO PROVIDE ENERGIZING VOLTAGES FOR REMOTE OPERATION OF TRANSMIT/ RECEIVE RELAY K3 AND PTT RELAY K4 WHEN THE ASSOCIATED AMPLIFIER USED WITH THE TRANSMITTER DOES NOT SUPPLY THESE VOLTAGES. THESE CONNECTIONS AND THE ONES ON PINS n, H, F AND P ARE NOT USED IN THE AN/WRC-1B.
7. ZENER DIODE A2CR10 ADDED FROM A2Q1 COLLECTOR TO GROUND, BY FIELD CHANGE 5 AN/URT-23 .

Figure Radio Transmitter T-827B/URT
Overall Schematic Diagram



FRONT OF T-8278/URT' ELECTRONIC ASSEMBLIES REMOVED

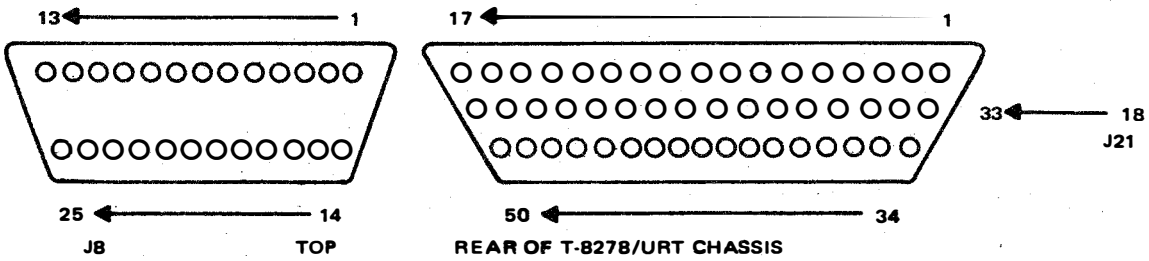


Figure Main Frame Connector Pin Locations

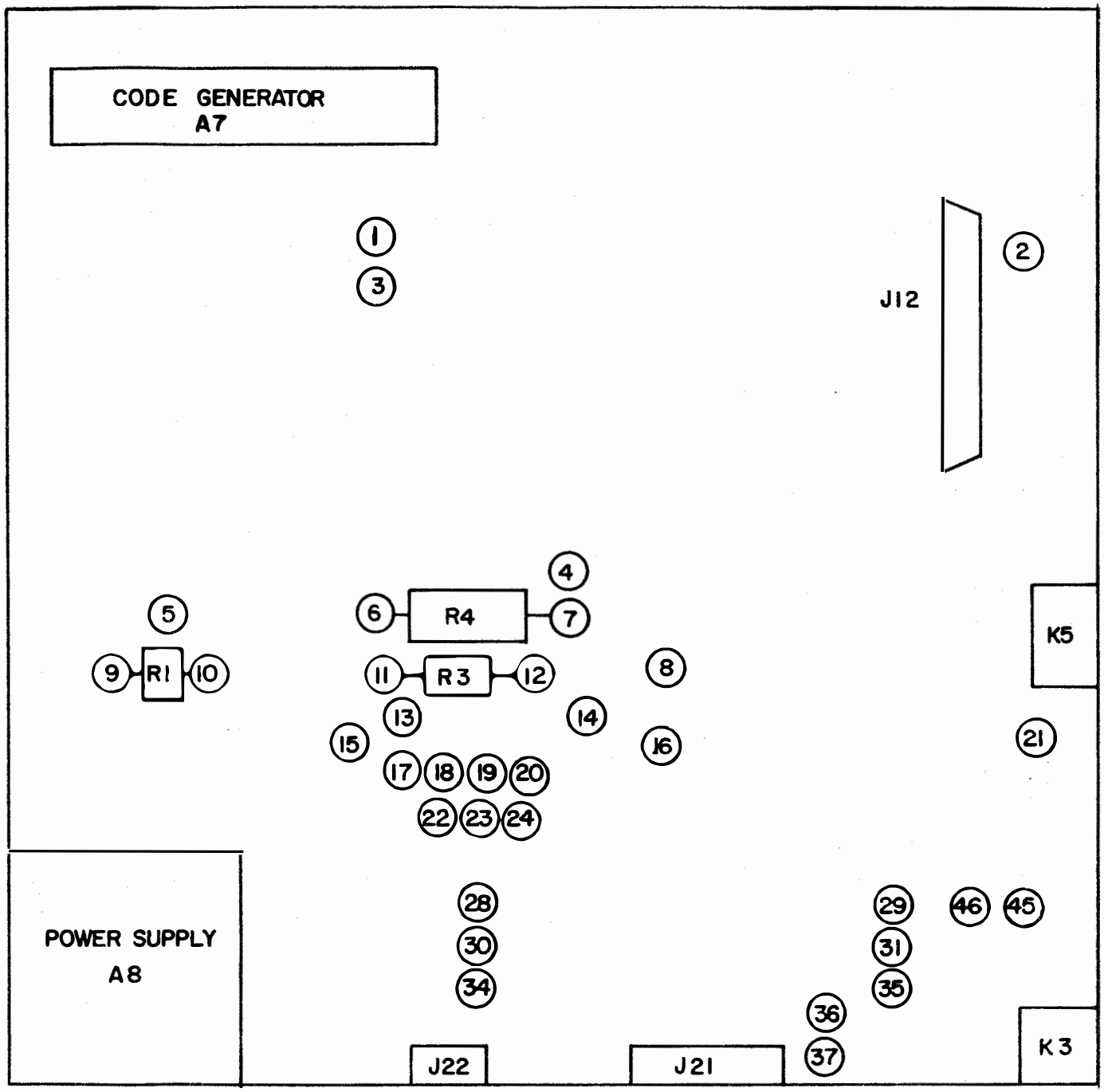
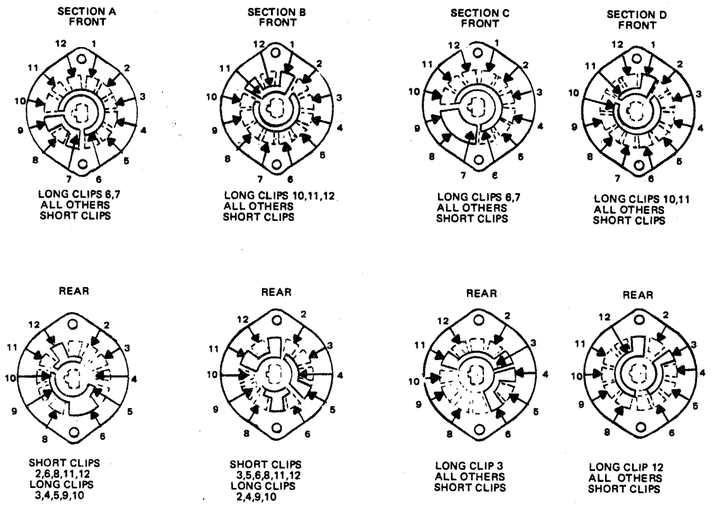
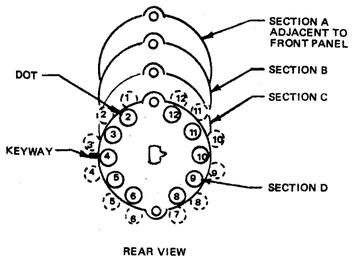


Figure T-827B/URT Bottom View, Location of Terminals ("E" Tie Points)

A. MODE SELECTOR SWITCH A2S2





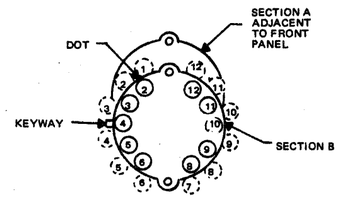
REAR VIEW

○ INDICATES TERMINALS LOCATED ON REAR PORTION OF WAFER

◌ INDICATES TERMINALS LOCATED ON FRONT PORTION OF WAFER

SWITCH SECTIONS VIEWED FROM FRONT OR KNOB END WITH ROTOR SHAFT IN EXTREME CCW POSITION (OFF).

B. REMOTE/LOCAL SWITCH A2S1



REAR VIEW

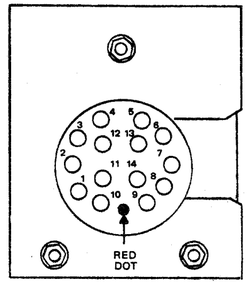
○ INDICATES TERMINALS LOCATED ON REAR PORTION OF WAFER

◌ INDICATES TERMINALS LOCATED ON FRONT PORTION OF WAFER

C. AUX/NORM SWITCH A2S7

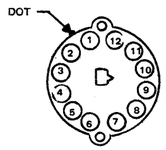
REAR VIEW

D. TRANSMIT/RECEIVE RELAY A2K3



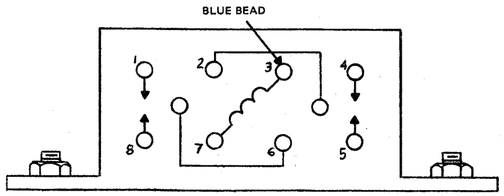
RELAY TERMINAL ARRANGEMENT

G. CPS SWITCH A2S6



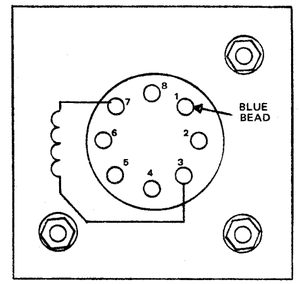
REAR VIEW

I. TUNE, HI-LO, CW HOLD, AND GROUND PULSE RELAYS A2K1, A2K2, A2K5, A2K6



RELAY TERMINAL ARRANGEMENT

J. PUSH TO TALK RELAY A2K4

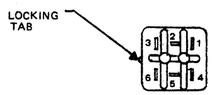


RELAY TERMINAL ARRANGEMENT

E. FUSEHOLDERS A2XF1, A2XF2

REAR VIEW

F. LOCAL ISB HANDSET, USB LINE LEVEL, AND LSB LINE LEVEL SWITCHES A2S9, A2S10, A2S11



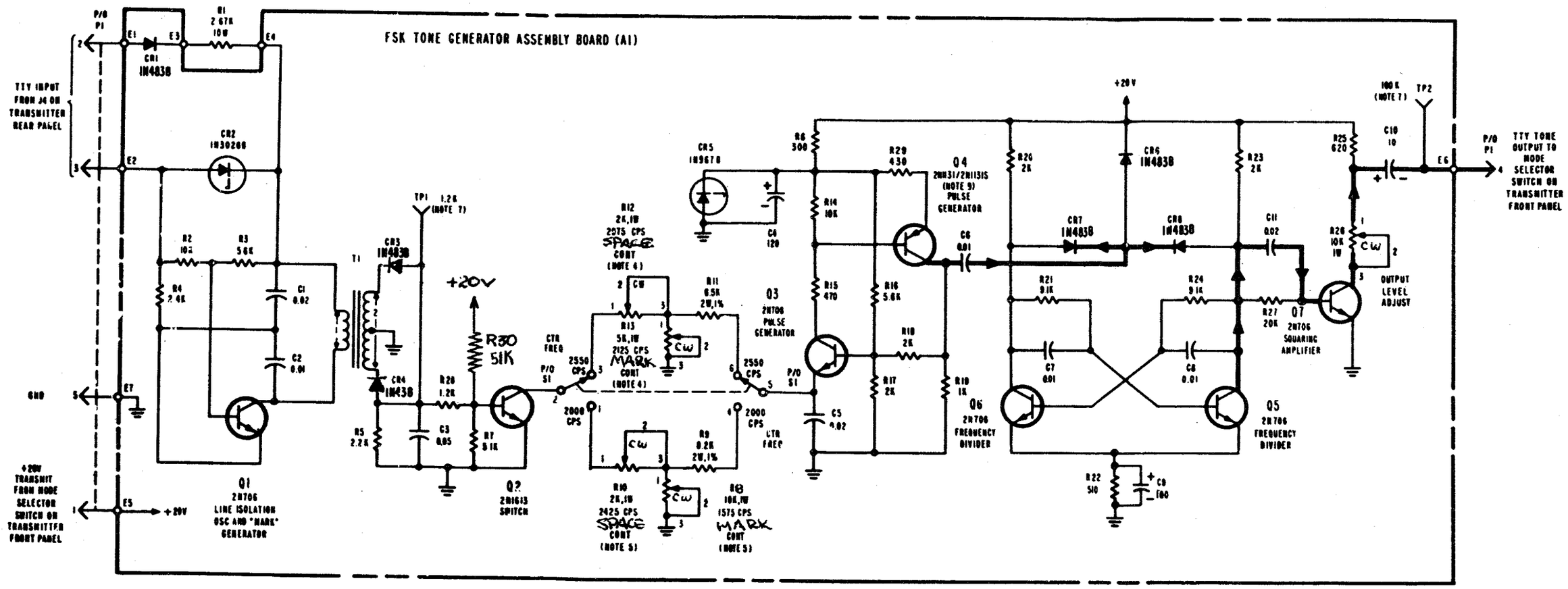
REAR VIEW

H. LSB AND USB LINE LEVEL METERS A2M1, A2M2

REAR VIEW

NOTE: SEE TABLE 5-2 FOR WIRING INFORMATION ON ALL COMPONENTS.

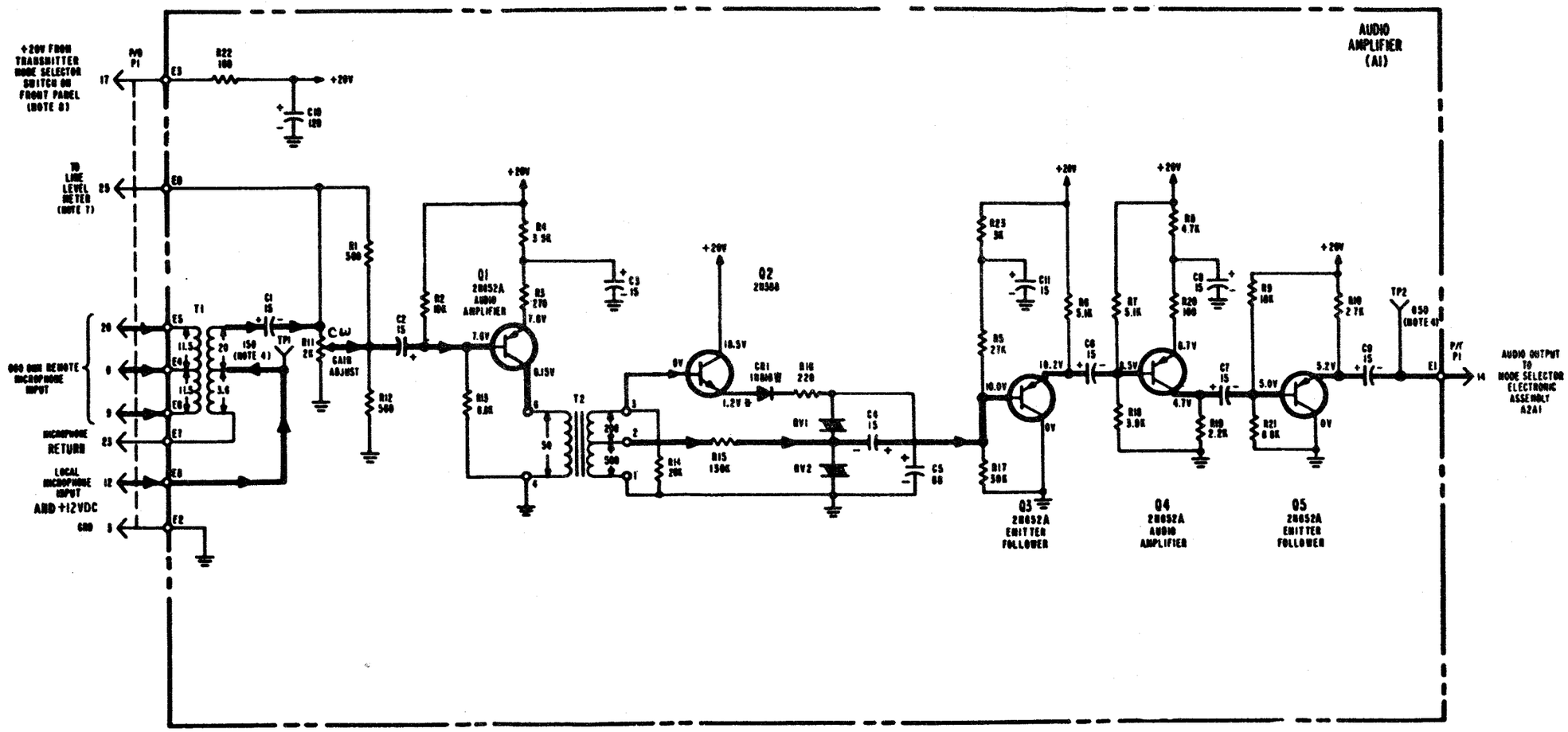
Figure Terminal Location Diagram, T-827B/URT Main Frame Components

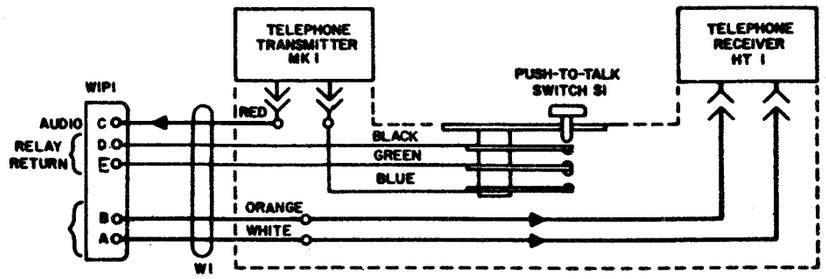


NOTES:

1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH 2A2A9
2. UNLESS OTHERWISE SPECIFIED:
   A. ALL RESISTANCE VALUES ARE IN OHMS. K-INDICATES THOUSANDS OF OHMS.
   B. ALL RESISTORS ARE 1/4 WATT, ± 5% TOL
   C. ALL CAPACITANCE VALUES ARE IN MICROFARADS
3. CW ON ALL POTENTIOMETERS INDICATE DIRECTION OF ROTATION WHEN VIEWED FROM SHAFT END.
4. A1R12 ADJUSTED FOR 2550 CPS CENTER FREQ SPACE (2975 CPS)
   A1R13 ADJUSTED FOR 2550 CPS CENTER FREQ MARK (2125) CPS
5. A1R10 ADJUSTED FOR 2000 CPS CENTER FREQ SPACE (2425 CPS)
   A1R8 ADJUSTED FOR 2000 CPS CENTER FREQ MARK (1575 CPS)
6. NUMBERS ADJACENT TO WINDINGS AND TEST POINTS INDICATE DC RESISTANCE
7. RESISTANCE VALUES AT SIGNIFICANT TEST POINTS ARE TO CHASSIS WITH ALL UNITS INTERCONNECTED, BUT EQUIPMENT DE-ENERGIZED
8. REFER TO APPLICABLE PRINTED CIRCUIT BOARD ILLUSTRATION FOR TRANSFORMER CIRCUIT ORIENTATION
9. Q4 IS REPLACED WITH 2N1131 OR 2N1131S REPLACEMENT TRANSISTOR MUST HAVE FOLLOWING PARAMETERS:
   f: 1KC/S V_{CE}: 10V DC
   I_C: 2MADC h_{fe}: <42

Figure FSK Tone Generator Electronic Assembly, Schematic Diagram





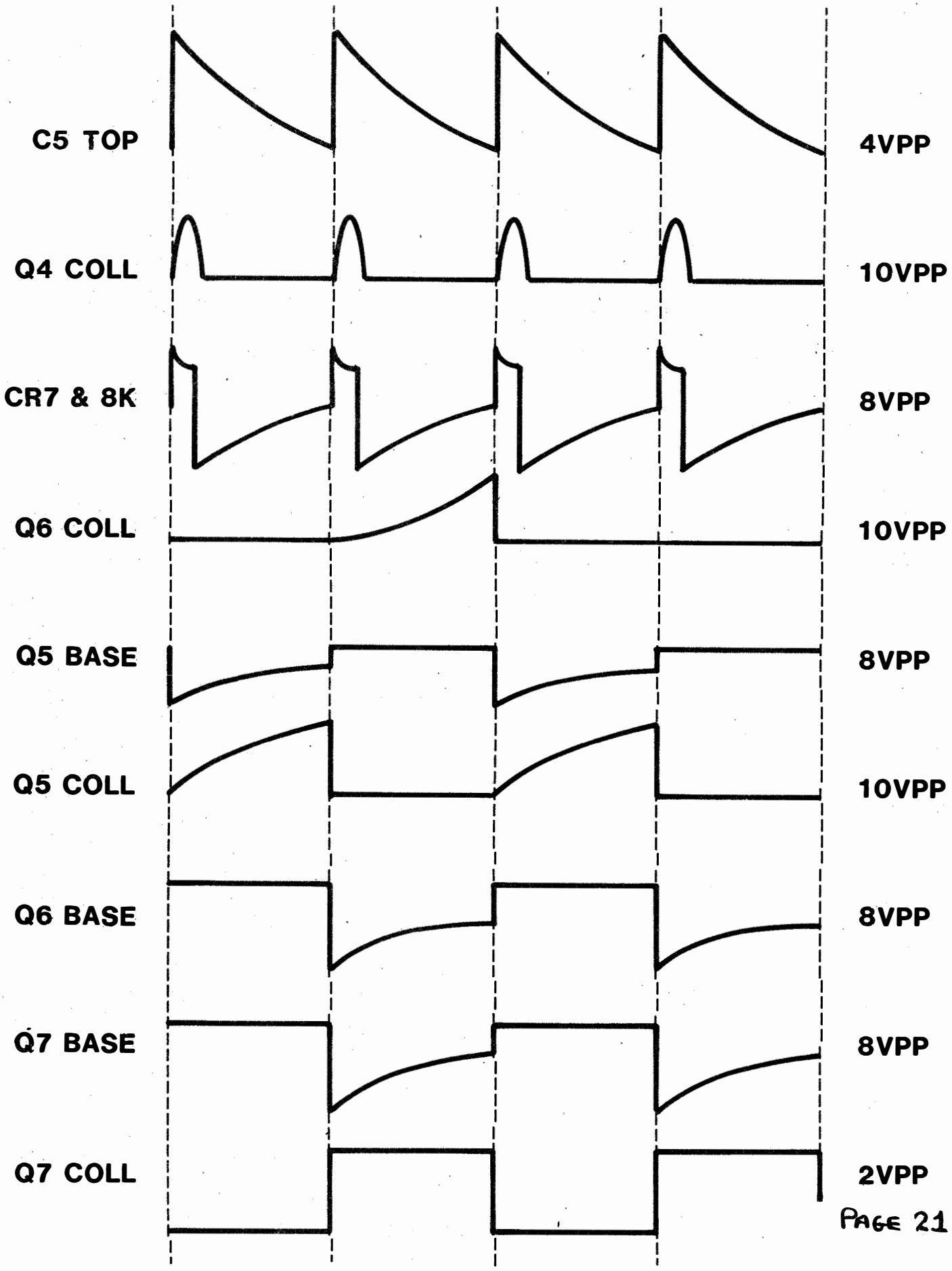
Dynamic Handset H-169/U, Schematic Diagram

NOTES:

1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN FOR COMPLETE DESIGNATION PREFIX WITH A2A2 OR A2A3
2. UNLESS OTHERWISE SPECIFIED:
   a. ALL RESISTANCE VALUES ARE IN OHMS. K=KILOHMS
   b. ALL RESISTORS ARE 1/4 WATT, ±5% TOLERANCE
   c. ALL CAPACITANCE VALUES ARE IN MICROFARADS
3. NUMBERS ADJACENT TO WINDINGS AND TEST POINTS INDICATE DC RESISTANCE (VALUES LESS THAN ONE OHM ARE NOT SHOWN).
4. RESISTANCE VALUES AT SIGNIFICANT TEST POINTS ARE TO CHASSIS WITH ALL UNITS INTERCONNECTED BUT EQUIPMENT DE-ENERGIZED.
5. ◆ EMITTER VOLTAGE VARIES WITH INPUT. A READING OF 1.2V OBTAINED WITH A 35MV INPUT AT PINS 12 AND 25.
6. UNLESS OTHERWISE INDICATED ALL VOLTAGES ARE DC, TAKEN WITH MULTIMETER AN/PSM-4
7. DURING LSB OPERATION THE AUDIO LEVEL AT P1-25 IS OBSERVED ON THE LSB LINE LEVEL METER (M1) DURING USB OPERATION THE AUDIO LEVEL AT P1-25 IS OBSERVED ON THE USB LINE LEVEL METER (M2).
8. DURING LSB OPERATION +20V LSB/ISB IS PRESENT AT P1-17 DURING USB OPERATION +20V USB/AM/FSK/ISB IS PRESENT AT P1-17
9. REFER TO APPLICABLE PRINTED CIRCUIT BOARD ILLUSTRATION FOR TRANSFORMER CIRCUIT ORIENTATION.

Figure Audio Amplifier Electronic Assembly, Schematic Diagram

FSK WAVEFORMS (2A2A9A1)



DC REFERENCES FOR 2A2A9A1

TRANSISTOR ELEMENT	MARK	SPACE
Q2 BASE	-1.2 VDC	.6 VDC
Q2 COLL	1.6 VDC	.1 VDC
Q3 EMIT	7.4 VDC	11.6 VDC
Q3 BASE	3.3 VDC	3.5 VDC
Q3 COLL	15.4 VDC	15.2 VDC
Q4 EMIT	16.5 VDC	16.0 VDC
Q4 BASE	16.0 VDC	15.5 VDC
Q4 COLL	1.8 VDC	2.3 VDC
Q5 EMIT	4.8 VDC	4.8 VDC
Q5 BASE	4.0 VDC	3.8 VDC
Q5 COLL	9.6 VDC	9.3 VDC
Q6 EMIT	4.8 VDC	4.8 VDC
Q6 BASE	4.1 VDC	3.8 VDC
Q6 COLL	10.5 VDC	10.5 VDC
Q7 EMIT	0 VDC	0 VDC
Q7 BASE	-1.1 VDC	-1.5 VDC
Q7 COLL	10 VDC	10 VDC

PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
C10	19B	A2R2	10B	A4C38	14I	A4R71	14H
C11	21D	A2R3	10B	A4C39	13G	A4R72	14H
C21	19D	A2R4	10C	A4C40	12F	A4R73	14I
FL1	20B	A2R5	10C	A4C41	6E	A4R74	15H
FL2	20D	A2R6	11B	A4C42	6E	A4R75	15G
P1	3F, 3G, 16E	A2R7	12B	A4C43	7E	A4R76	15H
P2	3A, 3B, 3C, 3D, 3E, 3I 16F, 16H, 22D	A2R8	13B	A4C44	8E	A4R77	13G
		A2R9	12B	A4C45	8E	A4R78	14G
		A2R10	12C	A4C46	6F	A4R79	14G
R41	21D	A2R11	14B	A4C47	8F	A4R80	13F
S1	10G	A2R12	15B	A4C48	4B	A4R81	13F
T1	16B	A2R13	14B	A4C49	8G	A4R82	13F
T2	16D	A2R14	15B	A4C50	6H	A4R83	14F
A1C12	11D	A3C7	17B	A4C51	7H	A4R84	14F
A1C13	13D	A3C8	18B	A4C52	7E	A4R85	6E
A1C14	13D	A3C9	18A	A4CR11	6B	A4R86	6E
A1C15	14D	A3C18	17D	A4CR12	14I	A4R87	6E
A1C16	14C	A3C19	18C	A4CR13	15H	A4R88	7E
A1C17	14D	A3C20	18C	A4CR14	15G	A4R89	7E
A1CR5	12D	A3Q1	17B	A4CR15	14F	A4R90	7E
A1CR6	12D	A3Q2	17D	A4CR16	7E	A4R91	8E
A1CR7	12C	A3R15	16B	A4CR17	7F	A4R92	8E
A1CR8	13D	A3R16	17B	A4CR18	8E	A4R93	8E
A1R21	10C	A3R17	17B	A4CR19	7F	A4R94	6F
A1R22	10C	A3R18	17A	A4CR20	8G	A4R95	6F
A1R23	10D	A3R19	17B	A4CR21	7G	A4R96	6G
A1R24	10D	A3R20	18B	A4CR100	7H	A4R97	7G
A1R25	10D	A3R35	16D	A4Q6	7C	A4R98	7F
A1R26	11D	A3R36	17D	A4Q7	7B	A4R99	8G
A1R27	12C	A3R37	17C	A4Q8	13H	A4R100	7G
A1R28	13D	A3R38	17C	A4R53	6B	A4R101	5G
A1R29	12D	A3R39	17C	A4R54	6C	A4R102	8F
A1R30	12D	A3R40	18D	A4R55	6B	A4R103	8H
A1R31	14D	A3TP2	18B	A4R56	6C	A4R104	9H
A1R32	15D	A3TP3	18D	A4R57	7C	A4R105	8H
A1R33	14D	A4C25	5B	A4R58	7D	A4R106	8H
A1R34	15D	A4C26	5B	A4R59	8C	A4R107	9H
A2C1	11C	A4C27	7C	A4R60	7A	A4R108	7H
A2C2	13B	A4C28	8C	A4R61	7B	A4R109	7H
A2C3	13B	A4C29	8C	A4R62	8A	A4R110	6H
A2C4	14B	A4C30	7B	A4R63	13H	A4R111	6H
A2C5	14B	A4C31	8B	A4R64	13H	A4R112	6H
A2C6	14C	A4C32	8B	A4R65	13H	A4R113	9F
A2CR1	12B	A4C33	14H	A4R66	13H	A4R114	8H
A2CR2	12C	A4C34	13H	A4R67	13H	A4R115	7D
A2CR3	12B	A4C35	12H	A4R68	12H	A4RT1	13H
A2CR4	13B	A4C36	12H	A4R69	14H	A4RT3	9C, 9D
A2R1	10B	A4C37	14H	A4R70	14H	A4T4	9B
						A4T5	15E

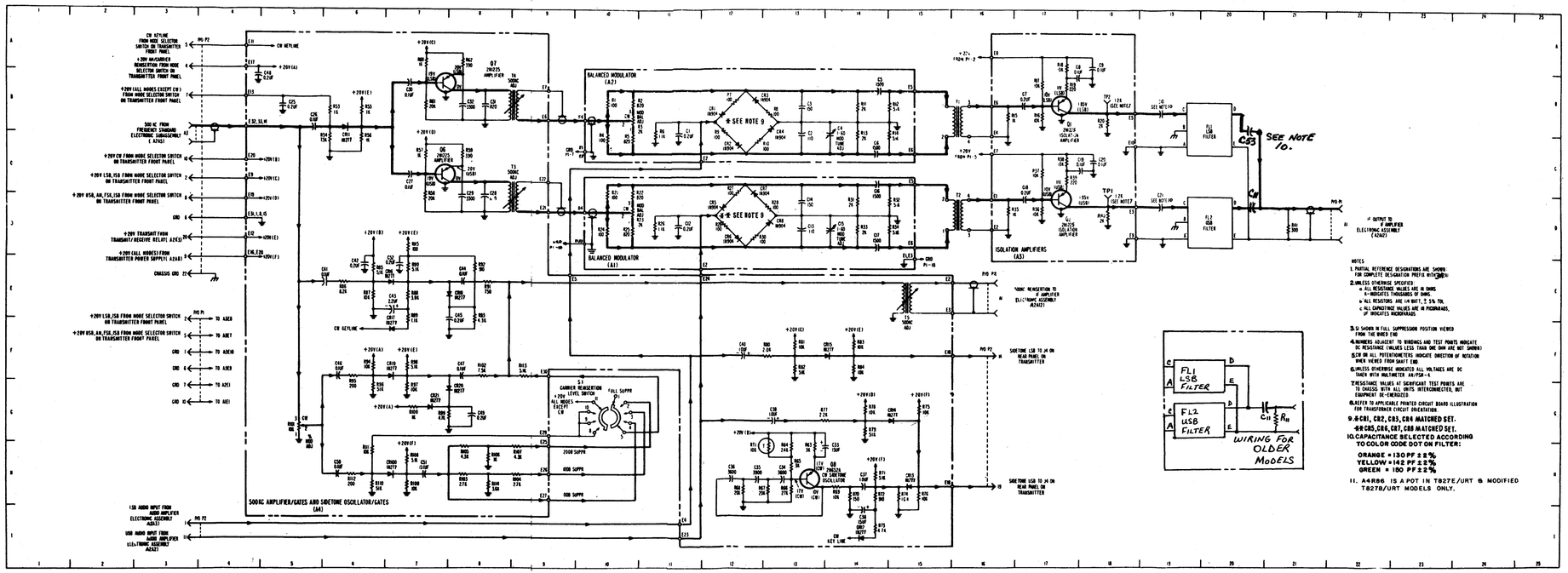
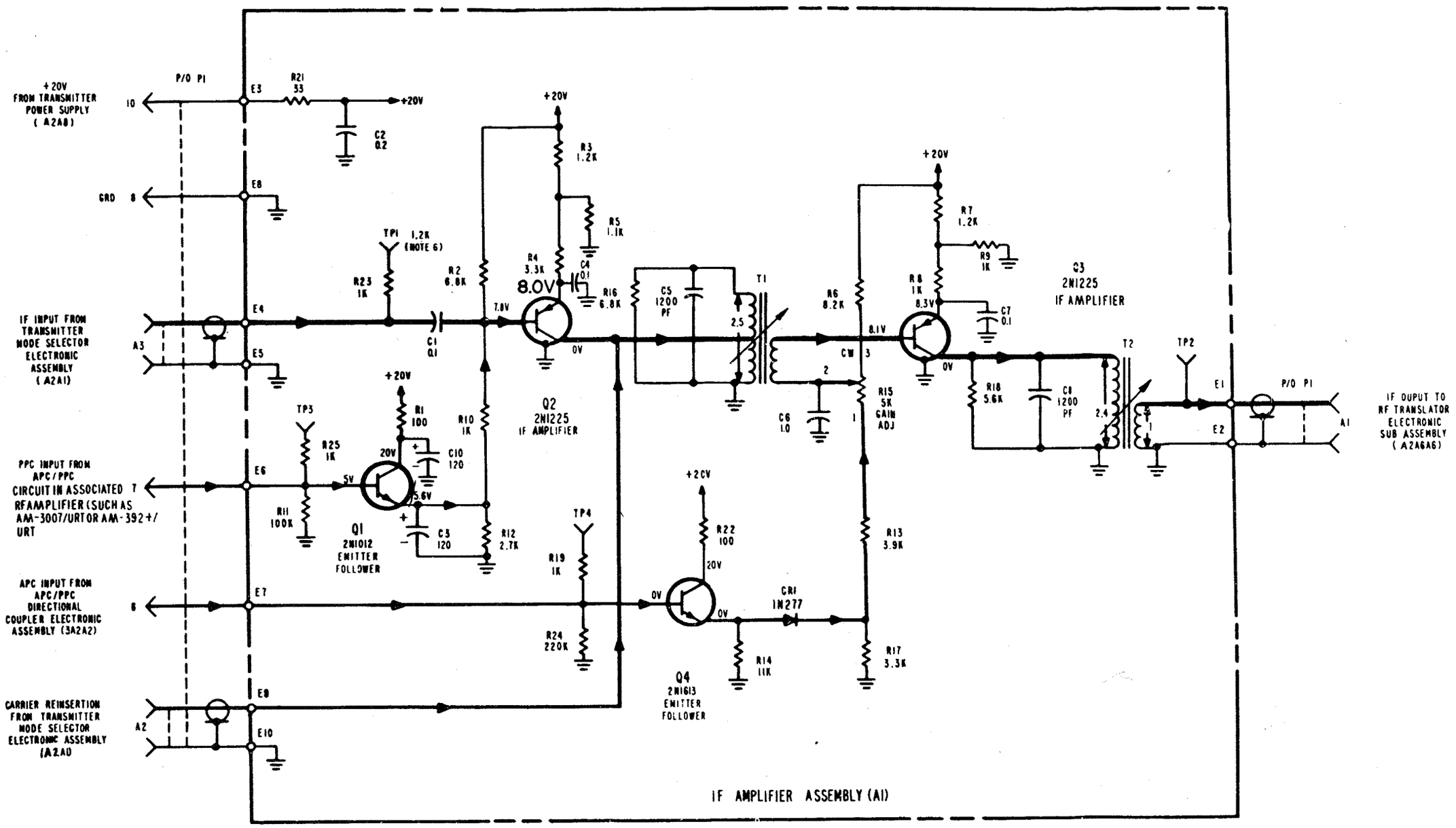


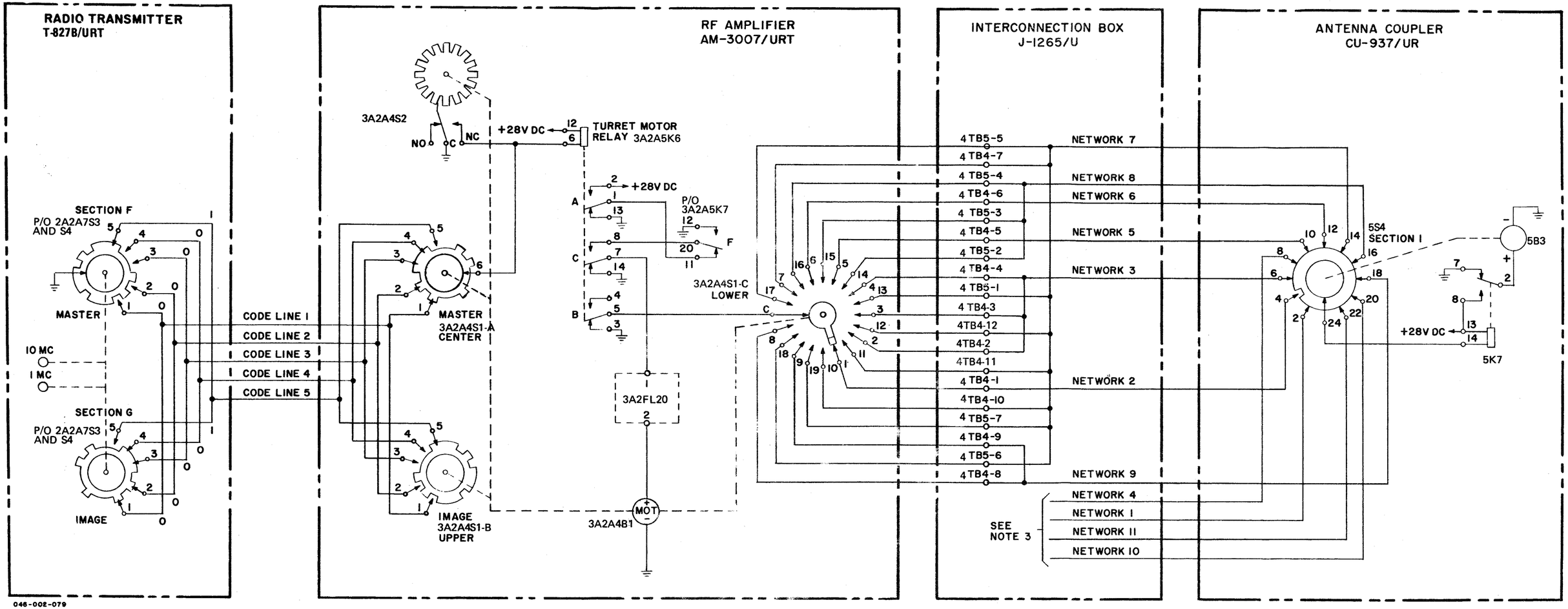
Figure Mode Selector Electronic Assembly, Schematic Diagram



NOTES:

1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH A2A12
2. UNLESS OTHERWISE SPECIFIED:
   a- ALL RESISTANCE VALUES ARE IN OHMS
   K-INDICATES THOUSANDS OF OHMS
   b- ALL RESISTORS ARE 1/4 WATT, ±5% TOL.
   c- ALL CAPACITANCE VALUES ARE IN MICROFARADS, PF INDICATES PICOFARADS.
3. NUMBERS ADJACENT TO WINDINGS AND TEST POINTS INDICATE DC RESISTANCE (VALUES LESS THAN ONE OHM ARE NOT SHOWN).
4. CW ON ALL POTENTIOMETERS INDICATE DIRECTION OF ROTATION WHEN VIEWED FROM SHAFT END.
5. UNLESS OTHERWISE INDICATED ALL VOLTAGES ARE DC TAKEN WITH MULTIMETER AN/PSM-4
6. RESISTANCE VALUES AT SIGNIFICANT TEST POINTS ARE TO CHASSIS WITH ALL UNITS INTERCONNECTED, BUT EQUIPMENT DE-ENERGIZED.
7. REFER TO APPLICABLE PRINTED CIRCUIT BOARD ILLUSTRATION FOR TRANSFORMER CIRCUIT ORIENTATION.

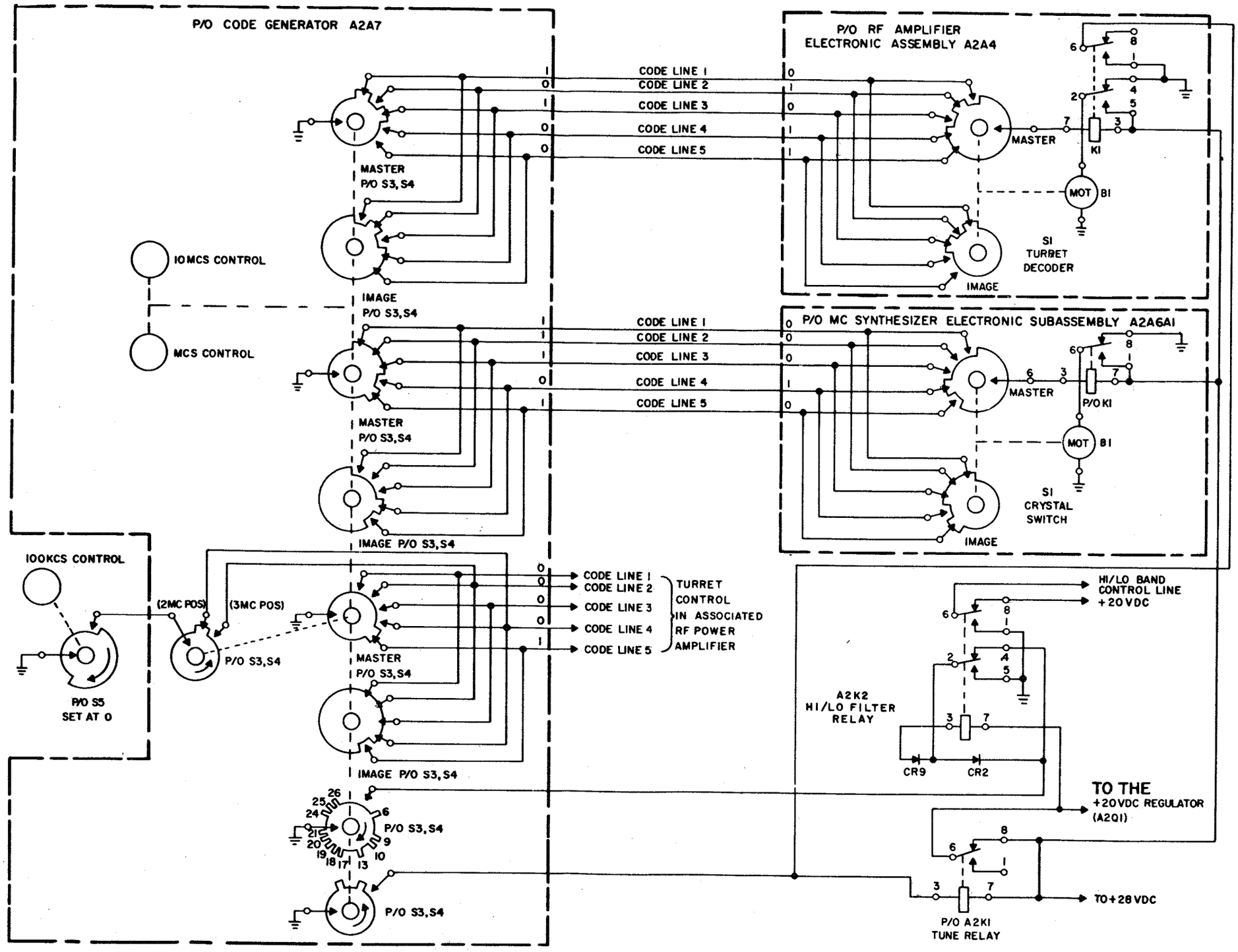
Figure IF. Amplifier Electronic Assembly, Schematic Diagram



NOTES:

1. AS SHOWN, UNITS ARE TUNED FOR 2.0 TO 2.499 MHz.
2. 5TB4 AND 5TB5 IN CU-937/UR ARE SHOWN PROGRAMMED FOR 35-FOOT WHIP ANTENNA.
3. USED ONLY WHEN PROGRAMMED FOR 15- OR 25-FOOT WHIP ANTENNA.

Figure System Tuning Circuits, Simplified Schematic Diagram



NOTE:

1. CODE GENERATOR, RF AMPLIFIER ELECTRONIC ASSEMBLY, AND MC SYNTHESIZER ELECTRONIC SUBASSEMBLY SWITCHES SHOW CONFIGURATION FOR 2MC POSITION ONLY AND DO NOT SHOW ACTUAL SWITCH ARRANGEMENT.
2. SEE TABLE 4-2 FOR TUNING CODE CHART.

Tuning, Simplified Schematic Diagram

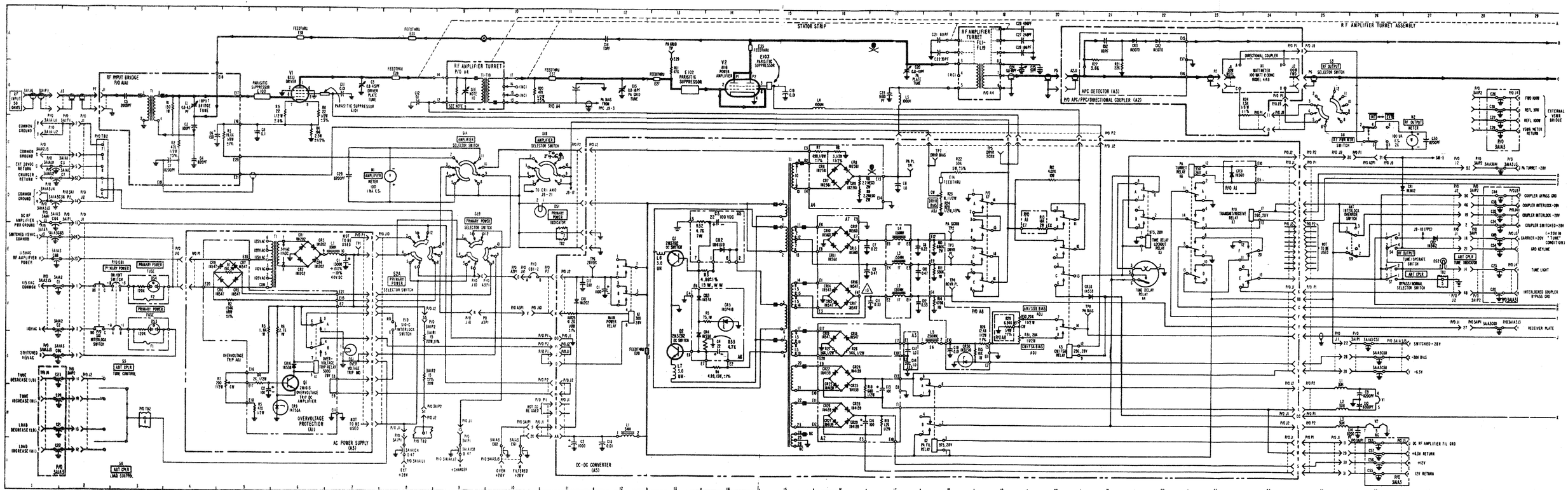
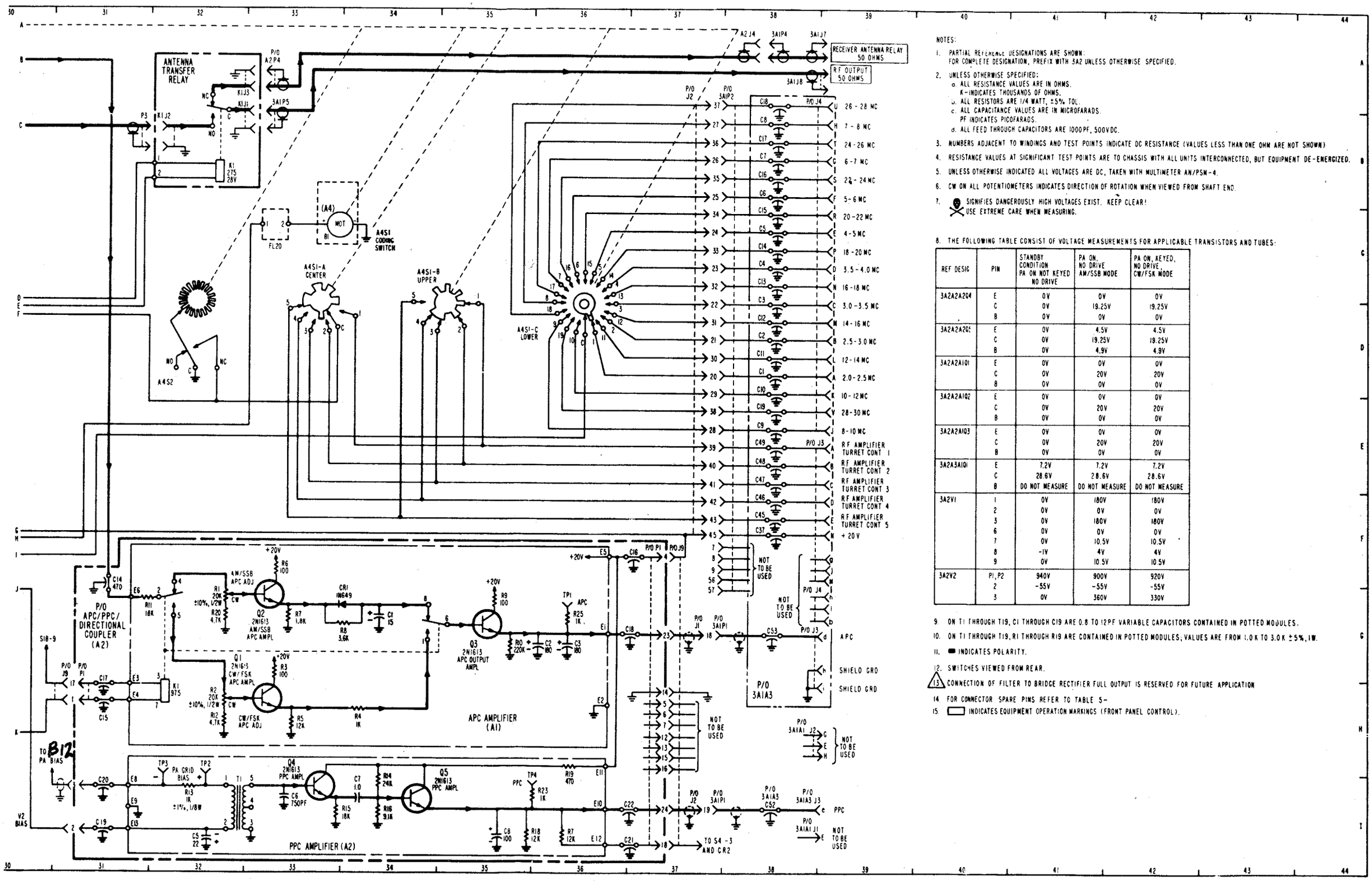


Figure RF Amplifier AM-3007/URT, Chassis and Main Frame, Schematic Diagram (Used with AN/WRC-1B, NObsr 93204(FBM) (Sheet 1 of 2)



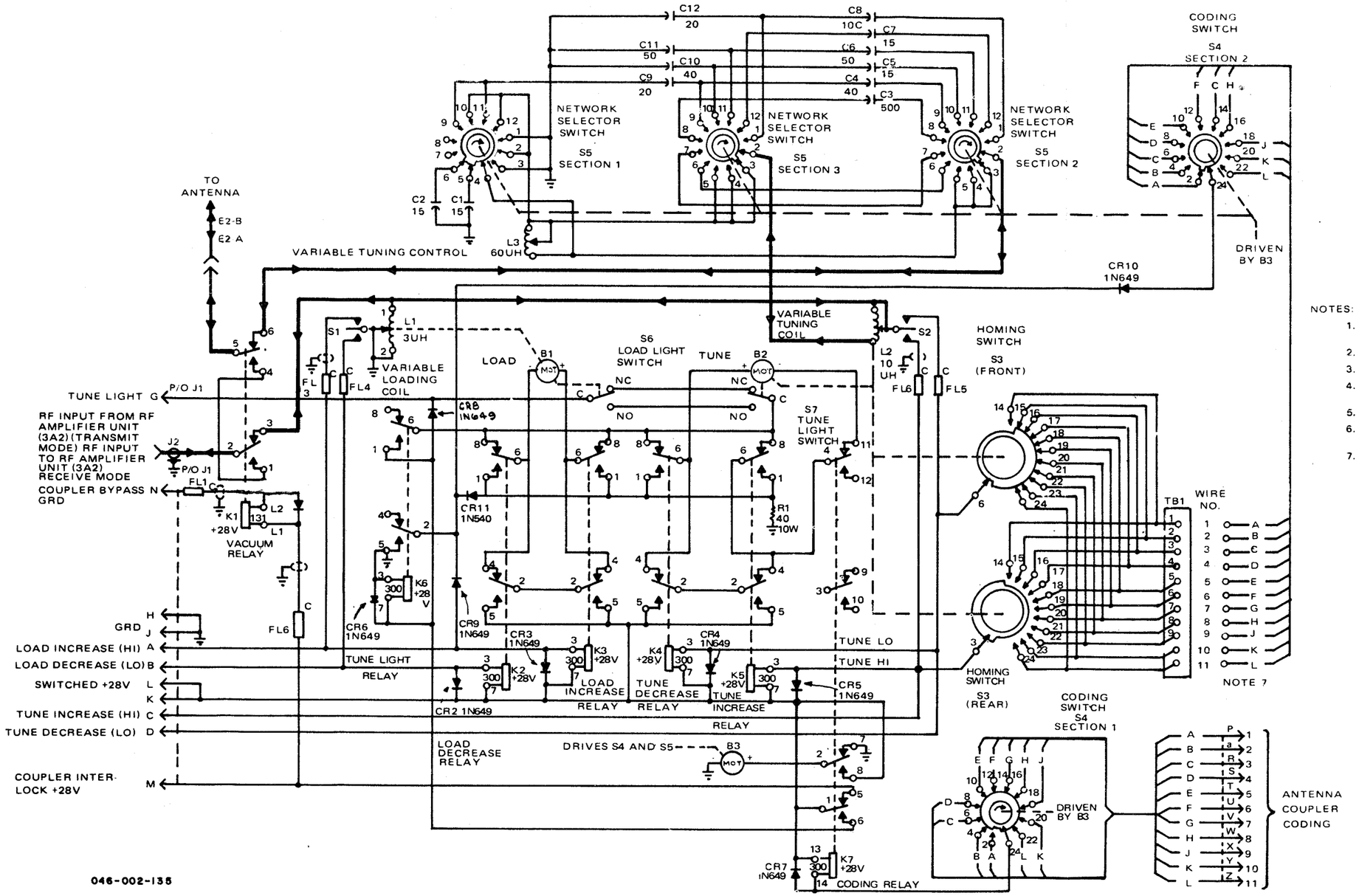
NOTES:

1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION, PREFIX WITH 3A2 UNLESS OTHERWISE SPECIFIED.
2. UNLESS OTHERWISE SPECIFIED:
   a. ALL RESISTANCE VALUES ARE IN OHMS. K-INDICATES THOUSANDS OF OHMS.
   b. ALL RESISTORS ARE 1/4 WATT, ±5% TOL.
   c. ALL CAPACITANCE VALUES ARE IN MICROFARADS. PF INDICATES PICOFARADS.
   d. ALL FEED THROUGH CAPACITORS ARE 1000PF, 500VDC.
3. NUMBERS ADJACENT TO WINDINGS AND TEST POINTS INDICATE DC RESISTANCE (VALUES LESS THAN ONE OHM ARE NOT SHOWN)
4. RESISTANCE VALUES AT SIGNIFICANT TEST POINTS ARE TO CHASSIS WITH ALL UNITS INTERCONNECTED, BUT EQUIPMENT DE-ENERGIZED.
5. UNLESS OTHERWISE INDICATED ALL VOLTAGES ARE DC, TAKEN WITH MULTIMETER AN/PSM-4.
6. CW ON ALL POTENTIOMETERS INDICATES DIRECTION OF ROTATION WHEN VIEWED FROM SHAFT END.
7. ☠ SIGNIFIES DANGEROUSLY HIGH VOLTAGES EXIST. KEEP CLEAR! USE EXTREME CARE WHEN MEASURING.
8. THE FOLLOWING TABLE CONSIST OF VOLTAGE MEASUREMENTS FOR APPLICABLE TRANSISTORS AND TUBES:

REF DESIG	PIN	STANDBY CONDITION PA ON NOT KEYED NO DRIVE	PA ON, NO DRIVE AM/SSB MODE	PA ON, KEYED, NO DRIVE, CW/FSK MODE
3A2A2A2Q4	E	0V	0V	0V
	C	0V	19.25V	19.25V
	B	0V	0V	0V
3A2A2A2Q5	E	0V	4.5V	4.5V
	C	0V	19.25V	19.25V
	B	0V	4.9V	4.9V
3A2A2A1Q1	E	0V	0V	0V
	C	0V	20V	20V
	B	0V	0V	0V
3A2A2A1Q2	E	0V	0V	0V
	C	0V	20V	20V
	B	0V	0V	0V
3A2A2A1Q3	E	0V	0V	0V
	C	0V	20V	20V
	B	0V	0V	0V
3A2A3A1Q1	E	7.2V	7.2V	7.2V
	C	28.6V	28.6V	28.6V
	B	DO NOT MEASURE	DO NOT MEASURE	DO NOT MEASURE
3A2V1	1	0V	180V	180V
	2	0V	0V	0V
	3	0V	180V	180V
	6	0V	0V	0V
	7	0V	10.5V	10.5V
	8	-1V	4V	4V
	9	0V	10.5V	10.5V
3A2V2	P1, P2	940V	900V	920V
	2	-55V	-55V	-55V
	3	0V	360V	330V

9. ON T1 THROUGH T19, C1 THROUGH C19 ARE 0.8 TO 12PF VARIABLE CAPACITORS CONTAINED IN POTTED MODULES.
10. ON T1 THROUGH T19, R1 THROUGH R19 ARE CONTAINED IN POTTED MODULES; VALUES ARE FROM 1.0K TO 3.0K ±5%, 1W.
11. ● INDICATES POLARITY.
12. SWITCHES VIEWED FROM REAR.
13. ⚠ CONNECTION OF FILTER TO BRIDGE RECTIFIER FULL OUTPUT IS RESERVED FOR FUTURE APPLICATION
14. FOR CONNECTOR SPARE PINS REFER TO TABLE 5-
15. ▭ INDICATES EQUIPMENT OPERATION MARKINGS (FRONT PANEL CONTROL).

Figure RF Amplifier AM-3007/URT, Chassis and Main Frame, Schematic Diagram (Used with AN/WRC-1B, NObsr 93204(FBM) (Sheet 2 of 2)



NOTES:

1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN FOR COMPLETE DESIGNATION, PREFIX WITH 5.
2. ALL CAPACITANCE VALUES ARE IN PICOFARADS.
3. ALL RESISTANCE VALUES ARE IN OHMS.
4. NUMBERS ADJACENT TO COILS INDICATE DC RESISTANCE (VALUES LESS THAN ONE OHM ARE NOT SHOWN).
5. UNLESS OTHERWISE INDICATED, ALL VOLTAGES ARE DC
6. HEAVY LINES INDICATE SIGNAL FLOW FOR TRANSMIT AND RECEIVE MODES OF OPERATION.
7. REFER TO THE INSTALLATION SECTION FOR PATCHING TO TB1.

Figure Antenna Coupler CU-937/UR, Schematic Diagram

PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
B1	19E	C21	1D	E17	1E	L1	20H
B2	16E	CR1	22G	FL1	24G	L2	16H
C1	10E	CR2	20B	FL2	23F	L3	13G
C2	10E	CR3	17B	FL3	22B	R1	13D
C3 – C8	NOT USED	CR4	16B	FL4	21B	S1	22B
C9	12F	CR5	13B	FL5	12B	S2	12C
C10	12F	CR6	22D	FL6	12B	S3	8A, 8D
C11	11F	CR7	3C	J1	24H	S3TB1	6D
C12	NOT USED	CR8	21E	J2	24I	S4	3B, 5C
C13	19E	CR9	21C	K1	8H, 22G	S4B3	1E
C14	15E	CR10	5D	K2	19C	S5	6H, 9H,
C15	1E	CR11	20D	K3	18C		12H
C16	19D	E2	3I	K4	16C	S5C3	10G
C17	15D	E13	19E	K5	13C	S5C4	10F
C18	1D	E14	18E	K6	22D	S5C5	9F
C19	19D	E15	15E	K7	3D	S5C6	9E
C20	15D	E16	16E	K8	20, 14D	S5C7	8E
						S6	18F
						S7	17F

NOTES:

GENERAL

A. UNLESS OTHERWISE SPECIFIED:
ALL RES. VALUES ARE IN OHMS
ALL CAP. VALUES ARE IN PF
ALL DIODES ARE 1N649

B. VALUES NEXT TO RELAY COILS ARE WINDING RESISTANCES IN OHMS.

C. RELAYS K2 THROUGH K8 ARE PIN-NUMBERED AS FOLLOWS:

SPECIFIC

1. ALL CONNECTIONS FROM 3J1 ARE TERMINATED AT J-3072, FIGURE 8-7. J2 IS CONNECTED TO AM-3007, FIGURE 5-72.
2. PATCHING OF 3TB1 (AND CONNECTIONS IN J-3072) ARE GIVEN IN TABLES 8-2 THRU 8-4.

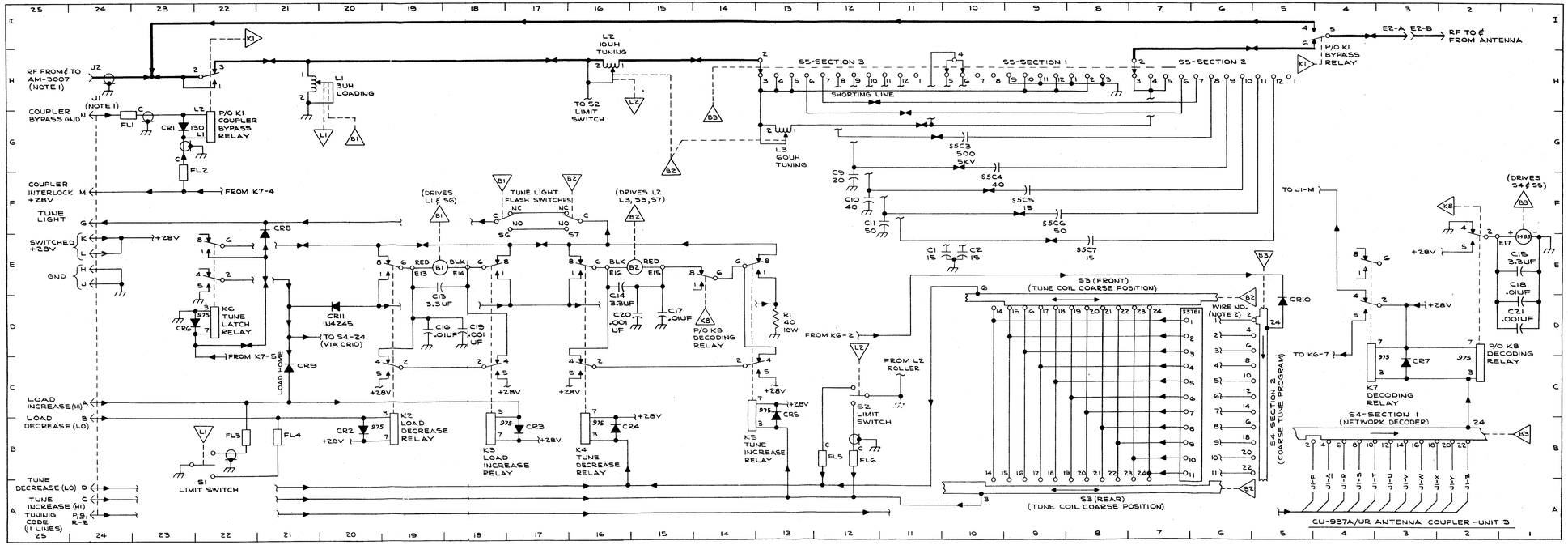


Figure CU-937A/UR Antenna Coupler, Schematic Diagram

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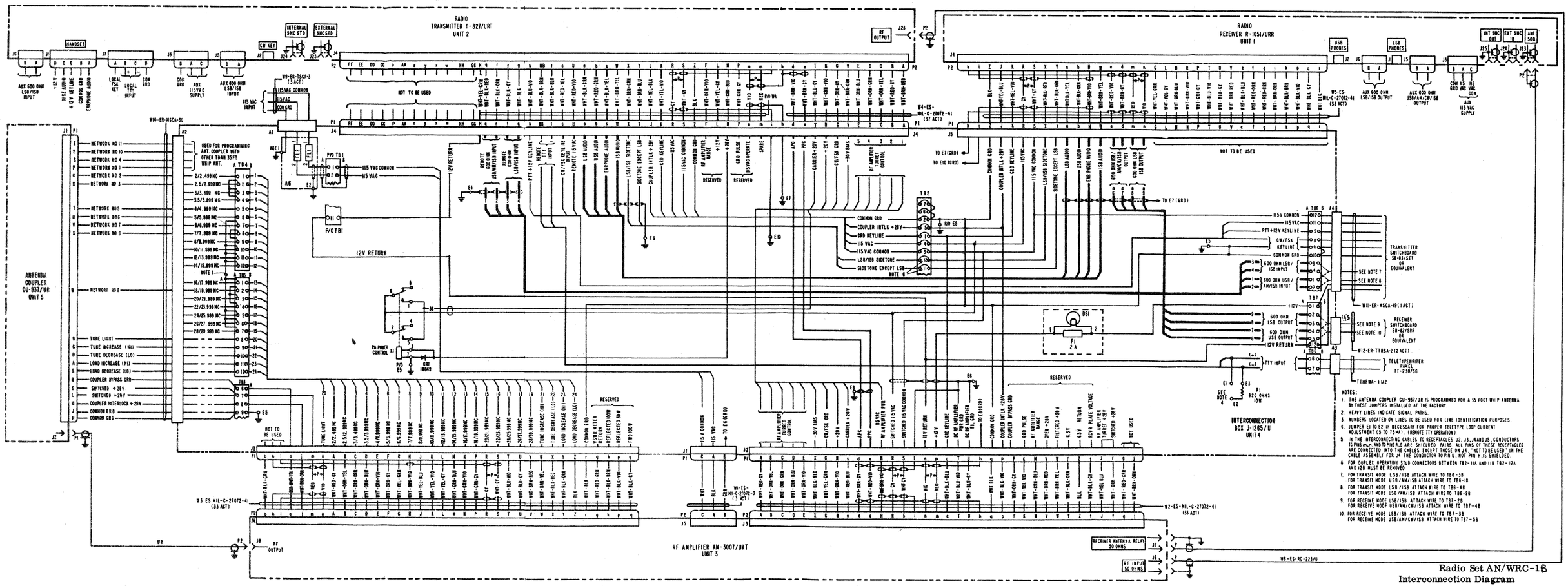


Radio Set AN/WRC-1B
Interconnection Diagram

NOTES:

1. Letters outside transistor blocks indicate element. Numbers on transformers and coils indicate terminal numbers.
2. All measurements except test points R, S, and T taken with AN/PSM-4( ) with respect to ground.
3. These measurements taken with AN/USM-117.
4. Measurements taken between indicated points.
5. Equipment in any operate mode.

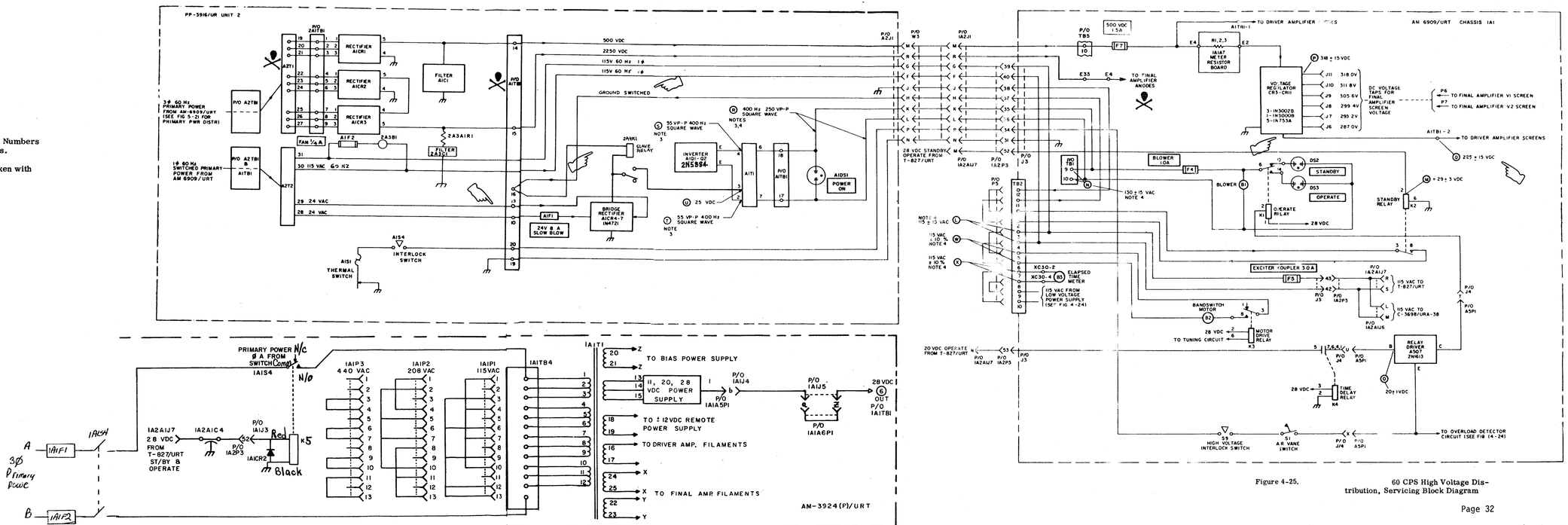


Figure 4-25. 60 CPS High Voltage Distribution, Servicing Block Diagram

Radio Frequency Amplifier AM-6909( )/URT, Chassis, Schematic Diagram
(Sheet 1 of 2)

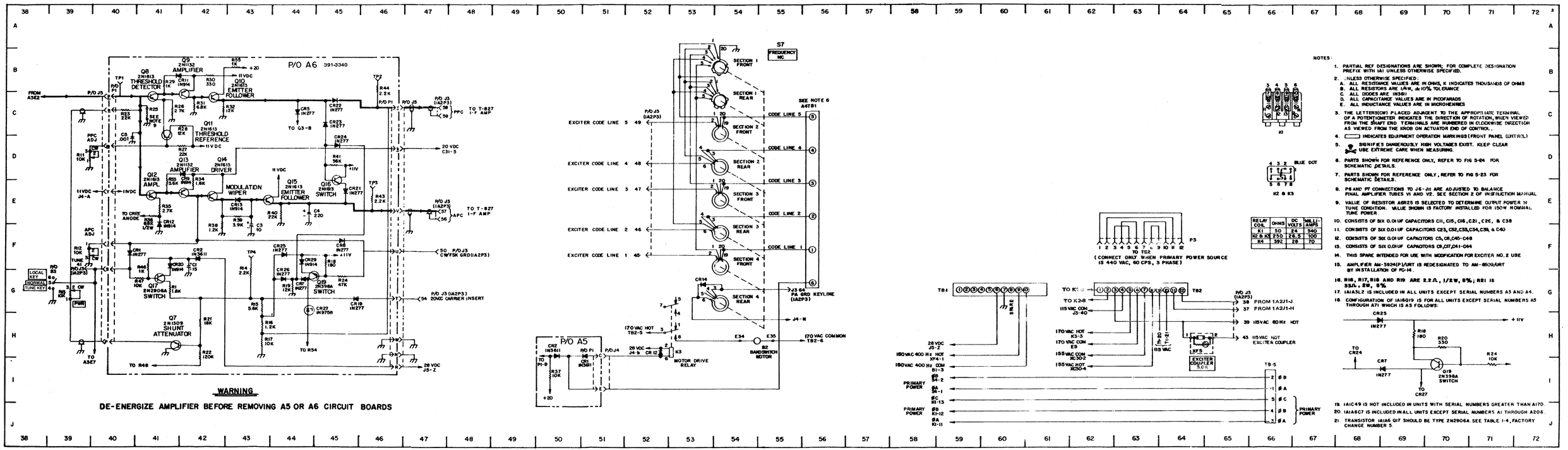
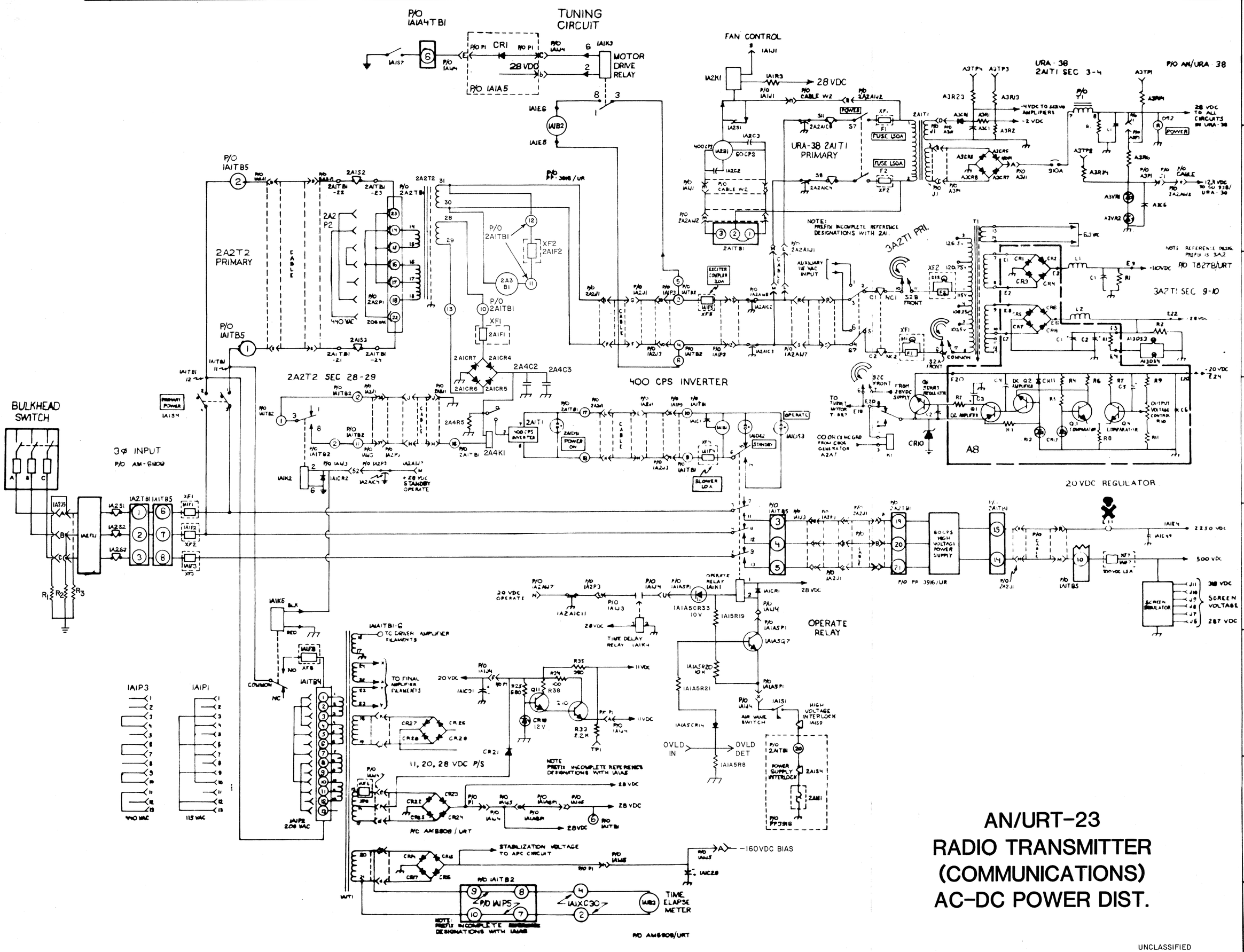
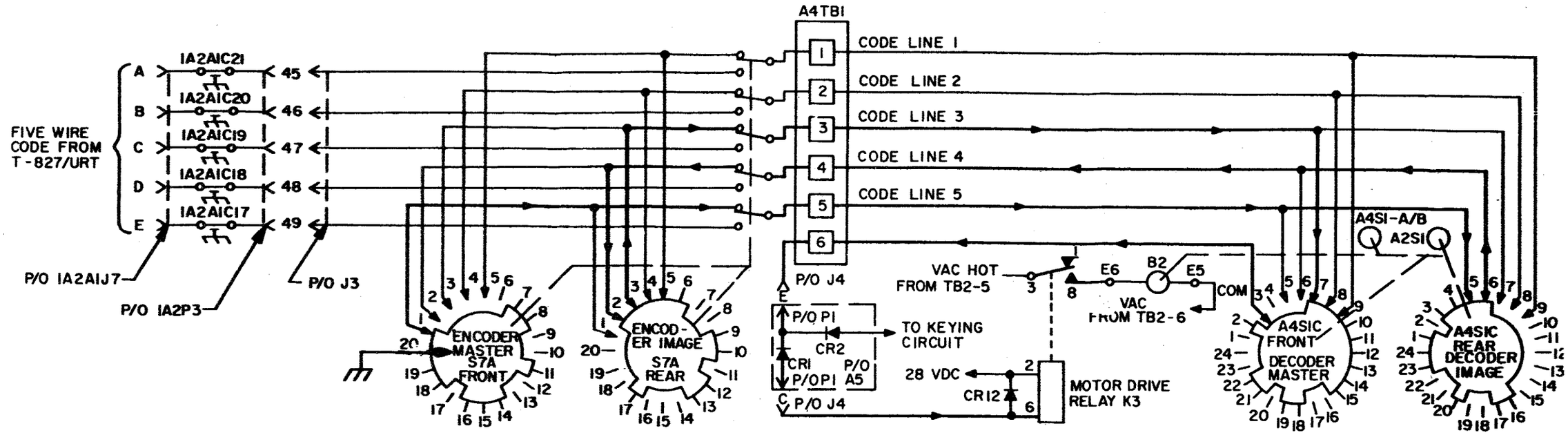


Figure 5-27. Radio Frequency Amplifier AM-6909( )/URT, Chassis Schematic Diagram (Sheet 2 of 2)

AN/URT-23
RADIO TRANSMITTER (COMMUNICATIONS)
AC-DC POWER DIST.

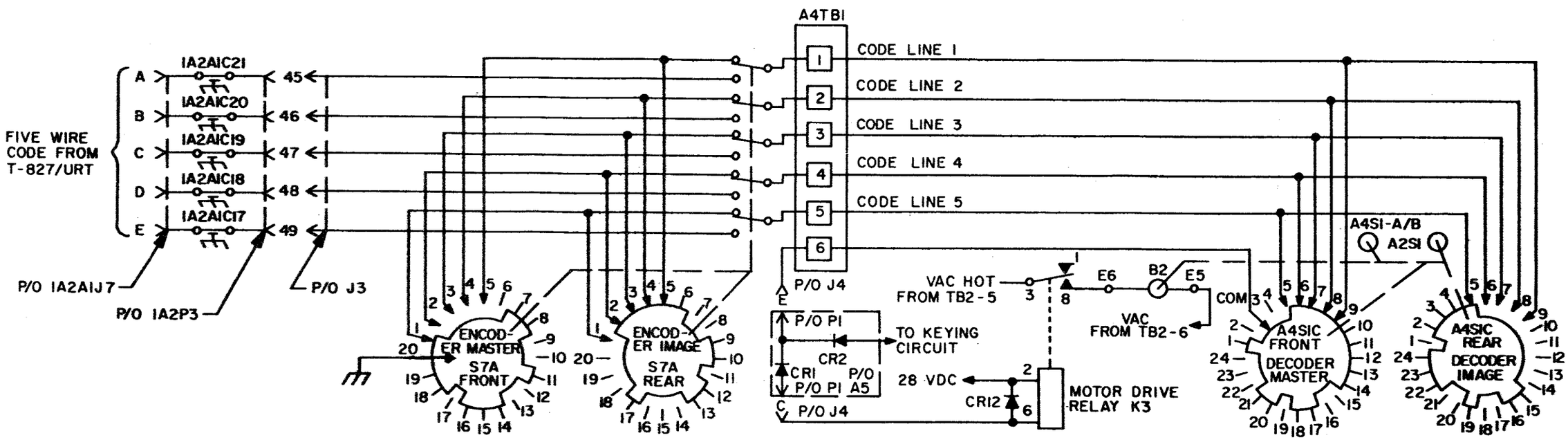


UNCLASSIFIED



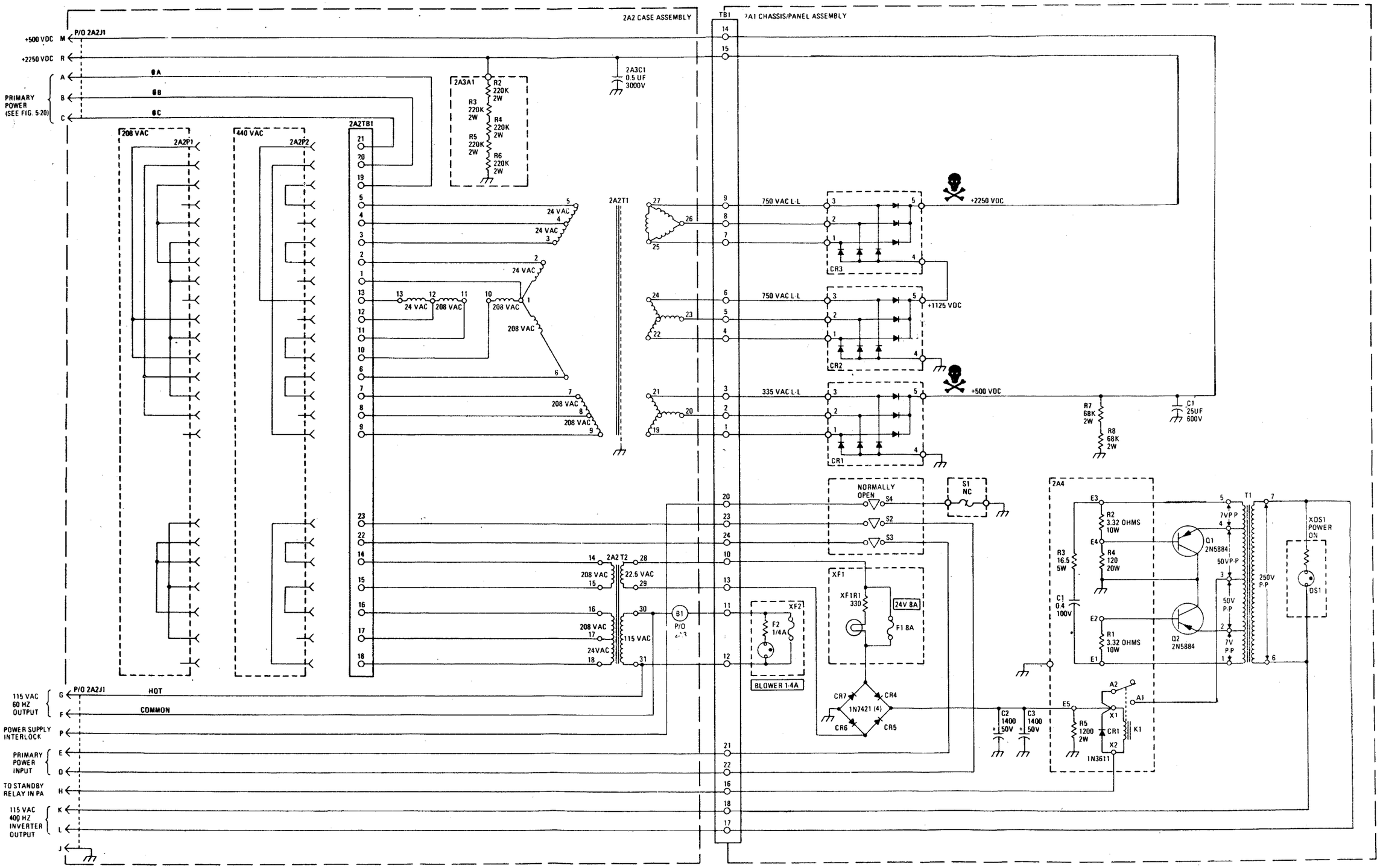
"B. CIRCUIT SHOWN IN PROCESS OF TUNING"

NOTE:
PREFIX INCOMPLETE REFERENCE DESIGNATIONS WITH 1A1



"A. CIRCUIT SHOWN POSITIONED TO THE 2.0 TO 2.5 MC BAND"

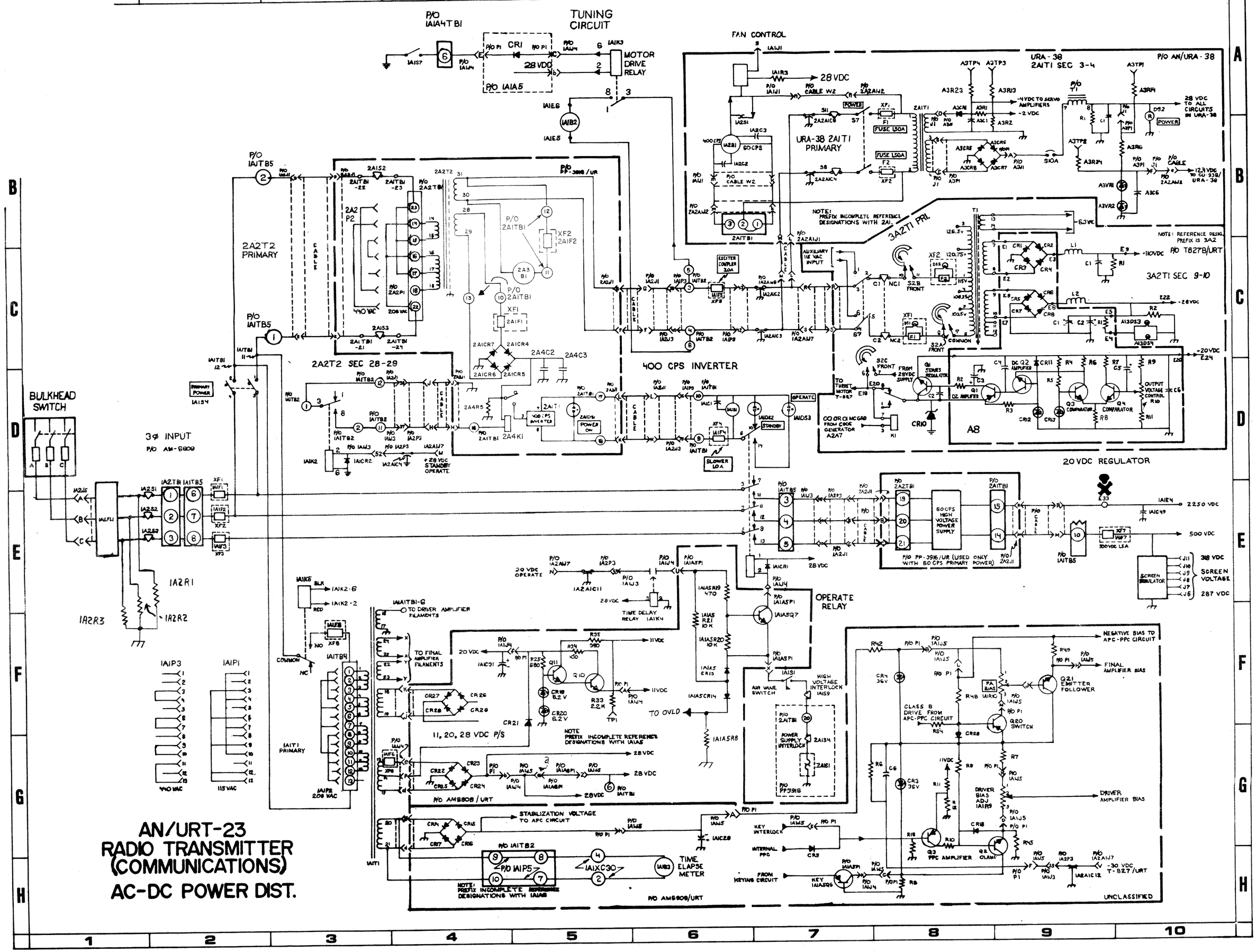
Tuning Circuit, Simplified Schematic Diagram



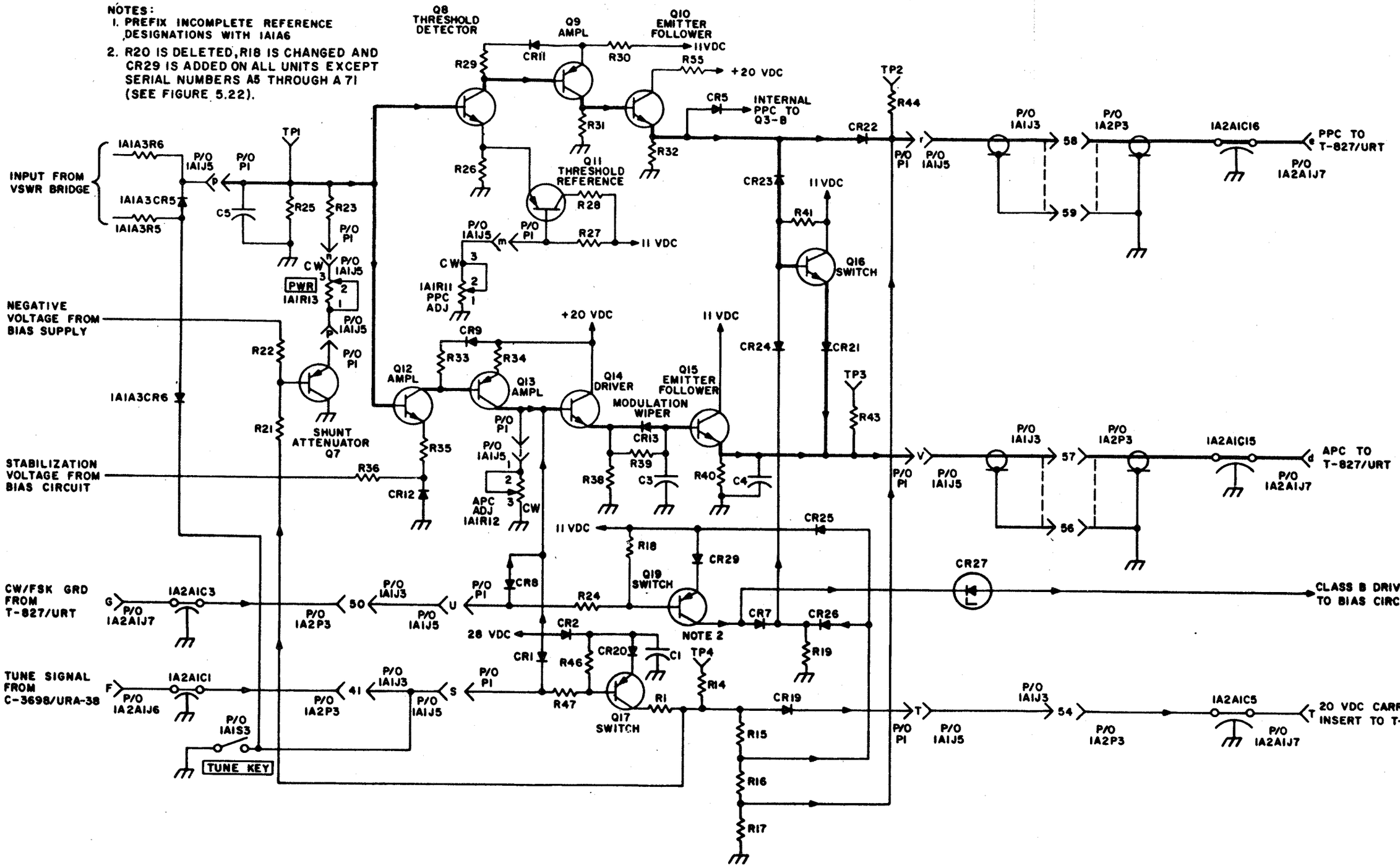
NOTE: 2A4 Assembly added by FC17 or FC18.

Figure 5-32. Power Supply PP-3916/UR, Schematic Diagram

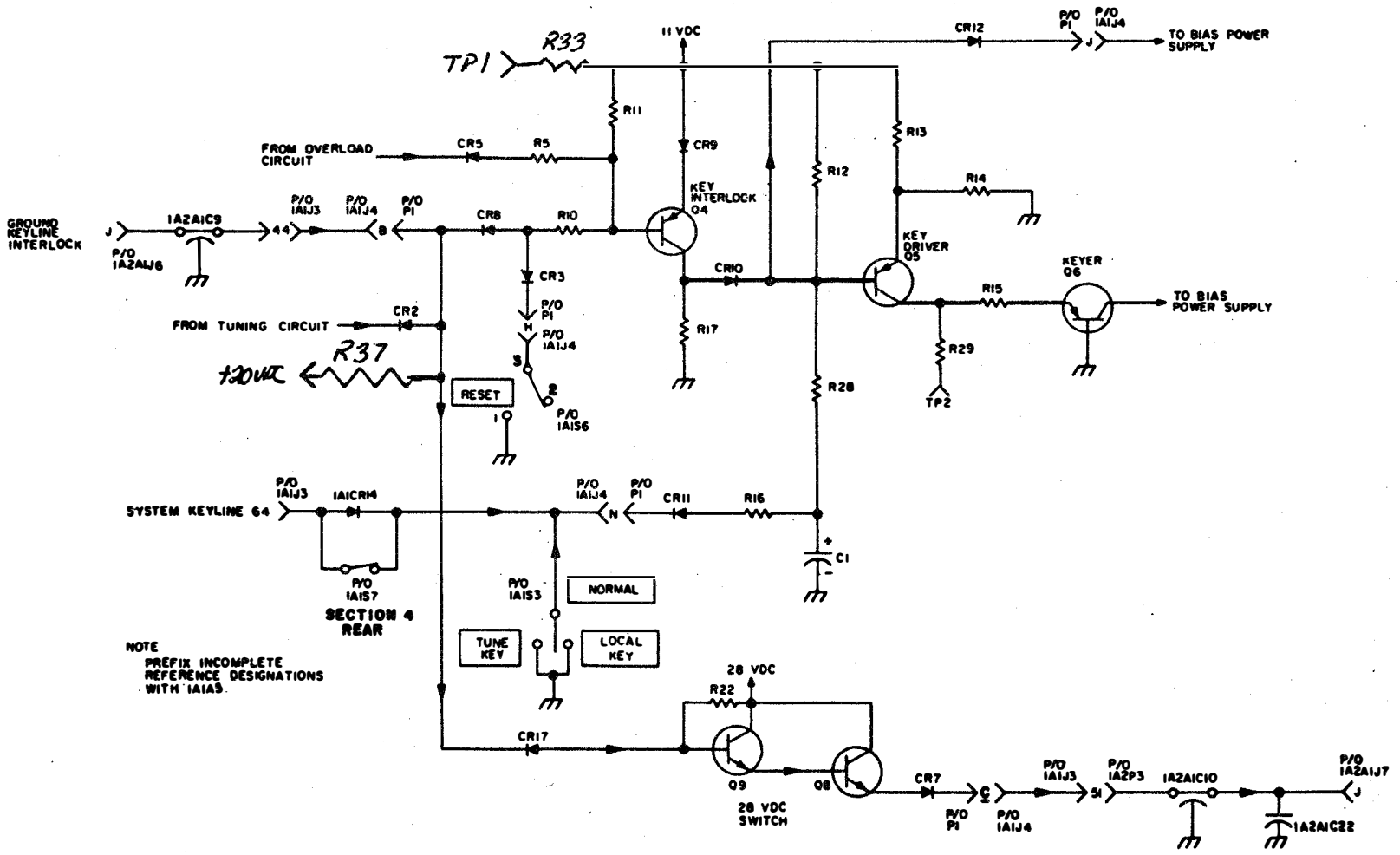
AN/URT-23
RADIO TRANSMITTER (COMMUNICATIONS)
AC-DC POWER DIST.



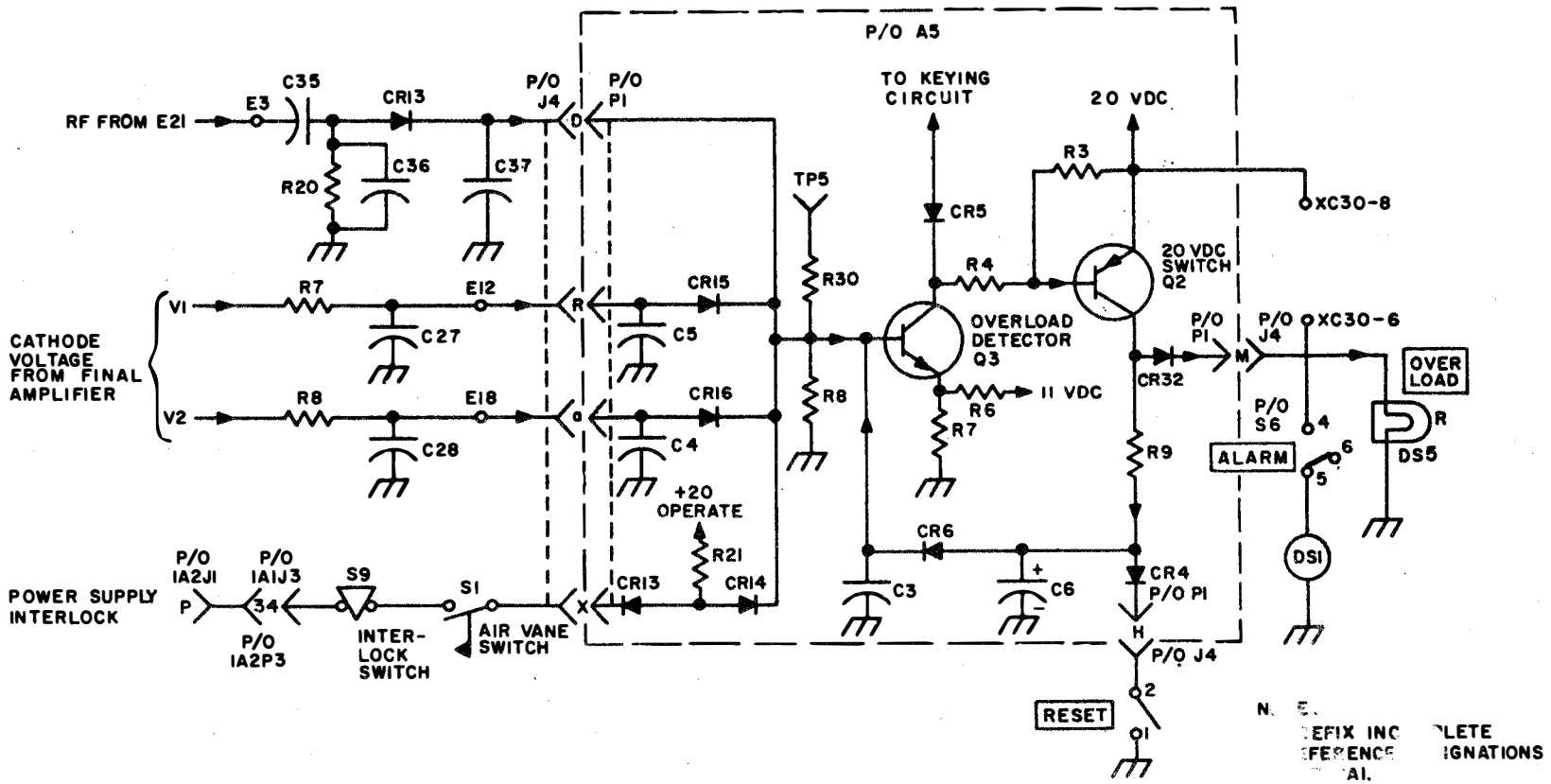
NOTES:
1. PREFIX INCOMPLETE REFERENCE DESIGNATIONS WITH 1A1A6
2. R20 IS DELETED, R18 IS CHANGED AND CR29 IS ADDED ON ALL UNITS EXCEPT SERIAL NUMBERS A5 THROUGH A71 (SEE FIGURE 5.22).



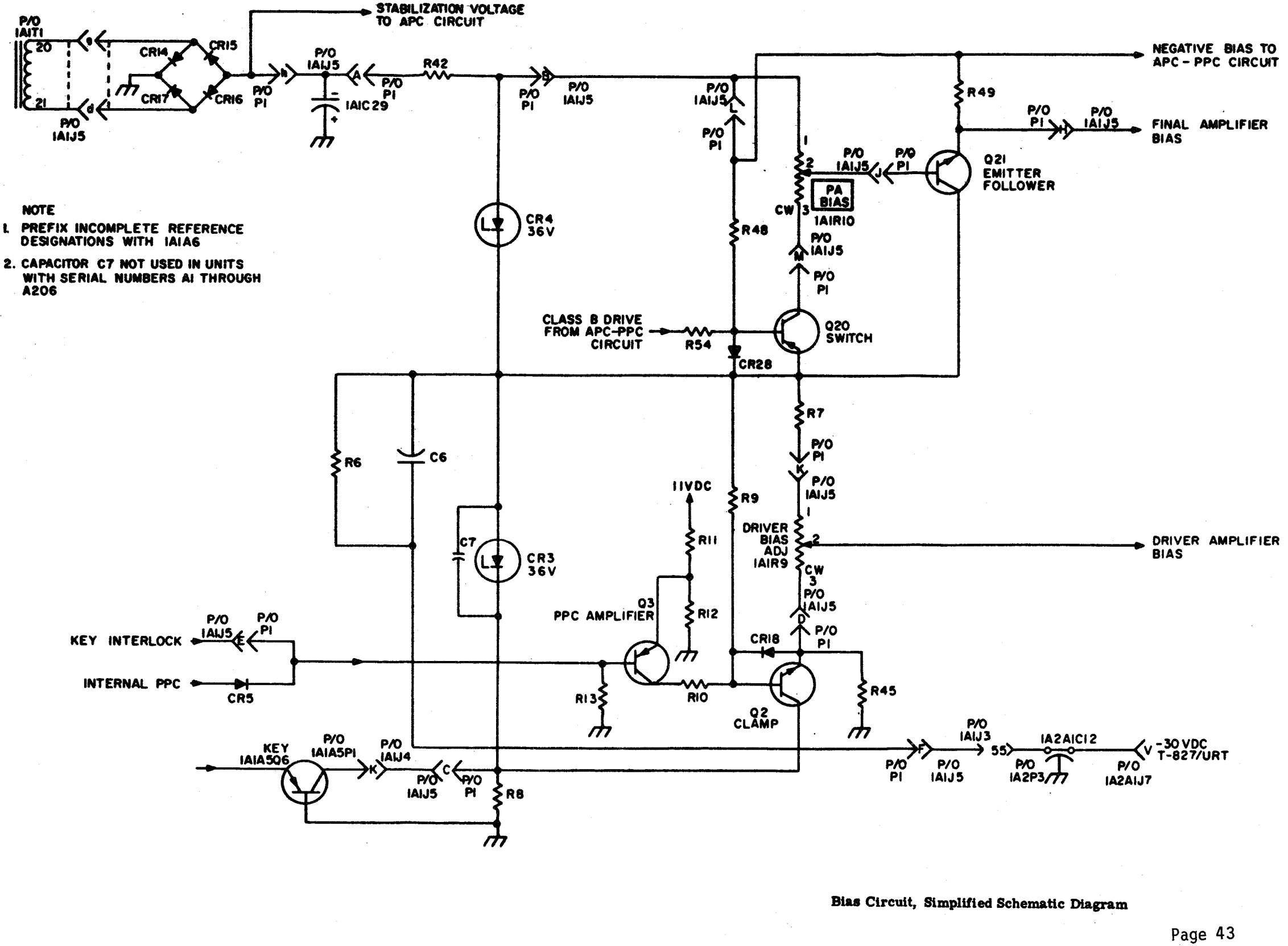
APC-PPC Circuit, Simplified Schematic Diagram



Keying Circuit, Simplified Schematic Diagram



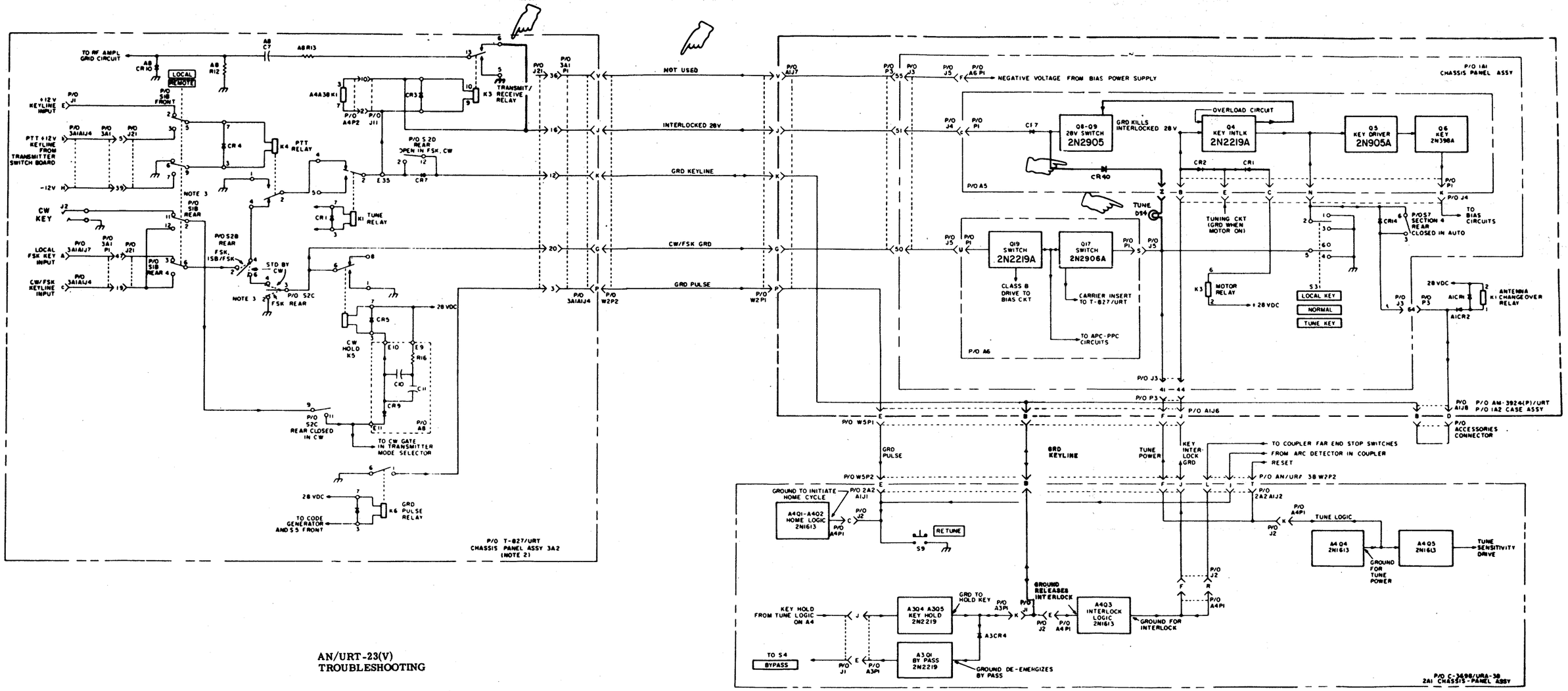
Overload Circuit, Simplified Schematic Diagram



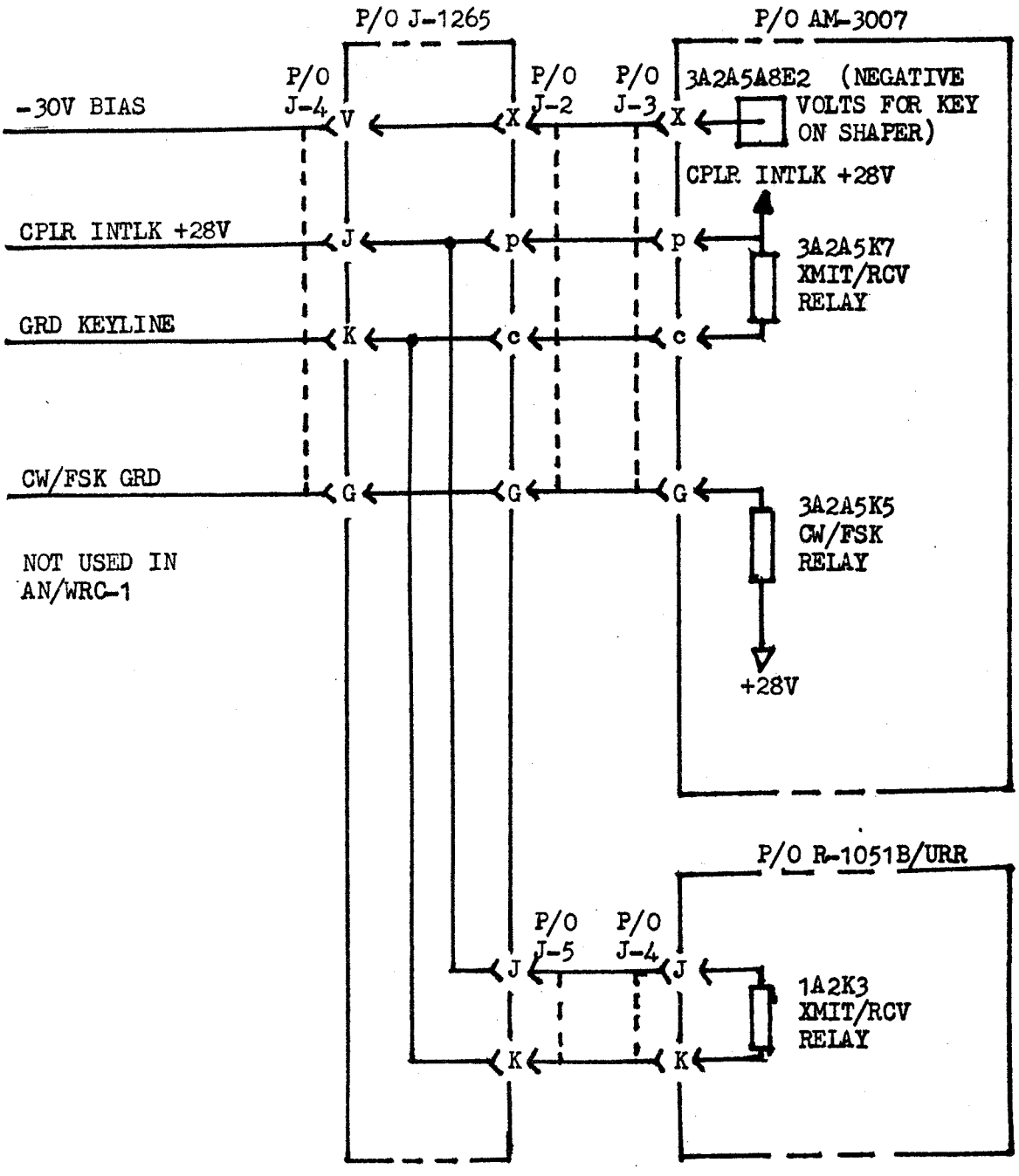
NOTE

1. PREFIX INCOMPLETE REFERENCE DESIGNATIONS WITH 1A1A6
2. CAPACITOR C7 NOT USED IN UNITS WITH SERIAL NUMBERS A1 THROUGH A206

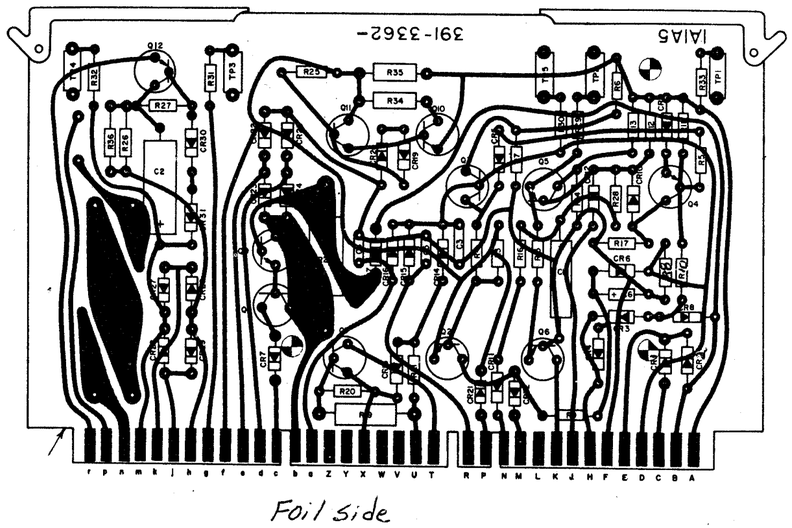
Bias Circuit, Simplified Schematic Diagram



System Keying and Key Interlock Circuitry, Servicing Block Diagram



KEYING CIRCUITRY FOR THE AN/WRC-1



REF DESIG PREFIX
1A1A5

PIN CALLOUTS

A - 11 VDC
B - Red Keyline Interlock
C - Motor Relay Coil
D - High Voltage Detector
E - Decoder Ground
F - Chassis Ground
H - Reset
J - Bias Interlock
K - Keyer Output
L - (not used)
M - Overload Circuit
N - Keyline
P - 16 VAC
R - 1A1V1 Cathode Current
S - (S is keyway)
T - Operate Relay Coil
U - 20 VDC Operate
V - (not used)
W - (not used)
X - Power Supply Interlock
Y - (not used)
Z - (not used)
a - 1A1V2 Cathode
b - 28 VDC Output
c - 28 VDC Interlock
d - 32 VAC
e - 32 VAC
f - 20 VDC
g - -12 VDC Remote
h - 12 VDC Remote Regulator Supply
j - 16 VAC
k - 16 VAC
m - +12 VDC Remote
n - (not used)
p - (not used)
r - 12 VDC Remote Regulator Drive

Printed Circuit Board 1A1A5, Component And Test Point Locations

PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
C1	3C	CR24	5C	R11	1B
C2	6B	CR25	5B	R12	2B
C3	3C	CR26	6C	R13	2B
C4	4C	CR27	6C	R14	2C
C5	4C	CR28	6D	R15	3C
C6	2C	CR29	6D	R16	3C
		CR30	6B	R17	2C
CR1	1D	CR31	6C	R19	E
CR2	2D	CR32	3D	R20	D
CR3	2D			R21	D
CR4	2D	Q2	3D	R22	5C
CR5	3B	Q3	3B	R25	5A
CR6	2C	Q4	1C	R26	6B
CR7	5D	Q5	3B	R27	6B
CR8	1D	Q6	2D	R28	2C
CR9	2B	Q7	D	R29	2B
CR10	2B	Q8	5D	R30	2B
CR11	3D	Q9	5C	R31	6B
CR12	2B	Q10	B	R32	7A
CR13	D	Q11	B	R33	1A
CR14	C	Q12	6A	R34	B
CR15	C			R35	A
CR16	C	R3	3C	R36	7B
CR17	C	R4	3C	R37	C
CR19	B	R5	1B		
CR20	B	R6	2A	TP1	1A
CR21	3D	R7	3B	TP2	2A
CR22	5B	R8	2C	TP3	5A
CR23	5C	R9	2E	TP4	7A
		R10	1C	TP5	3A

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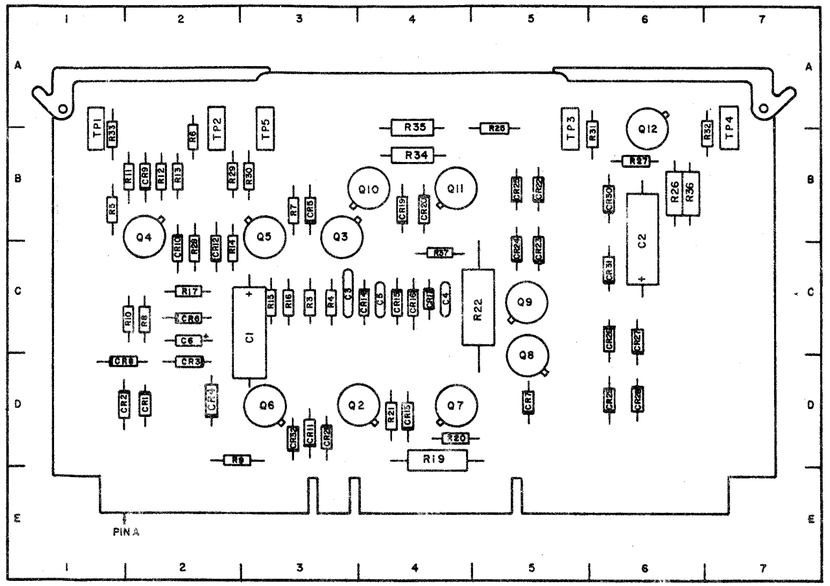


REF DESIG PREFIX 1A1A5

COMPONENT SIDE

Printed Circuit Board 1A1A5, Component and Test Point Locations

PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
C1	3D	CR29	6D	R13	3B
C2	6C	CR30	6B	R14	3C
C3	4A	CR31	6C	R15	3C
C4	5C	CR32	3D	R16	3C
C5	4D	CR33	4E	R17	2C
C6	4B	CR34	2B	R19	4D
C7	1D	CR35	5D	R20	4D
		CR36	4C	R21	4D
CR1	2D	CR40	5D	R22	1B
CR2	1D	Q2	3D	R25	5B
CR3	2E	Q3	3B	R26	6B
CR4	3E	Q4	2C	R27	6B
CR6	4B	Q5	3C	R28	3C
CR7	5D	Q6	3C	R29	3B
CR9	2C	Q7	4D	R30	4B
CR10	2C	Q8	5C	R31	6B
CR11	3D	Q9	1B	R32	6A
CR12	3C	Q10	5B	R33	3B
CR14	4C	Q11	5C	R34	5B
CR15	4C	Q12	6B	R35	5B
CR16	5C			R38	5C
CR19	5B	R3	4C	R39	6C
CR21	3D	R4	4C	R40	5D
CR22	5C	R6	2B	R41	1D
CR23	5D	R7	2B	R42	1B
CR24	5D	R8	1C		
CR25	5C	R9	4C	TP1	3A
CR26	6D	R10	2D	TP2	3A
CR27	6D	R11	2D	TP3	5A
CR28	6D	R12	2B	TP4	5A
				TP5	4A

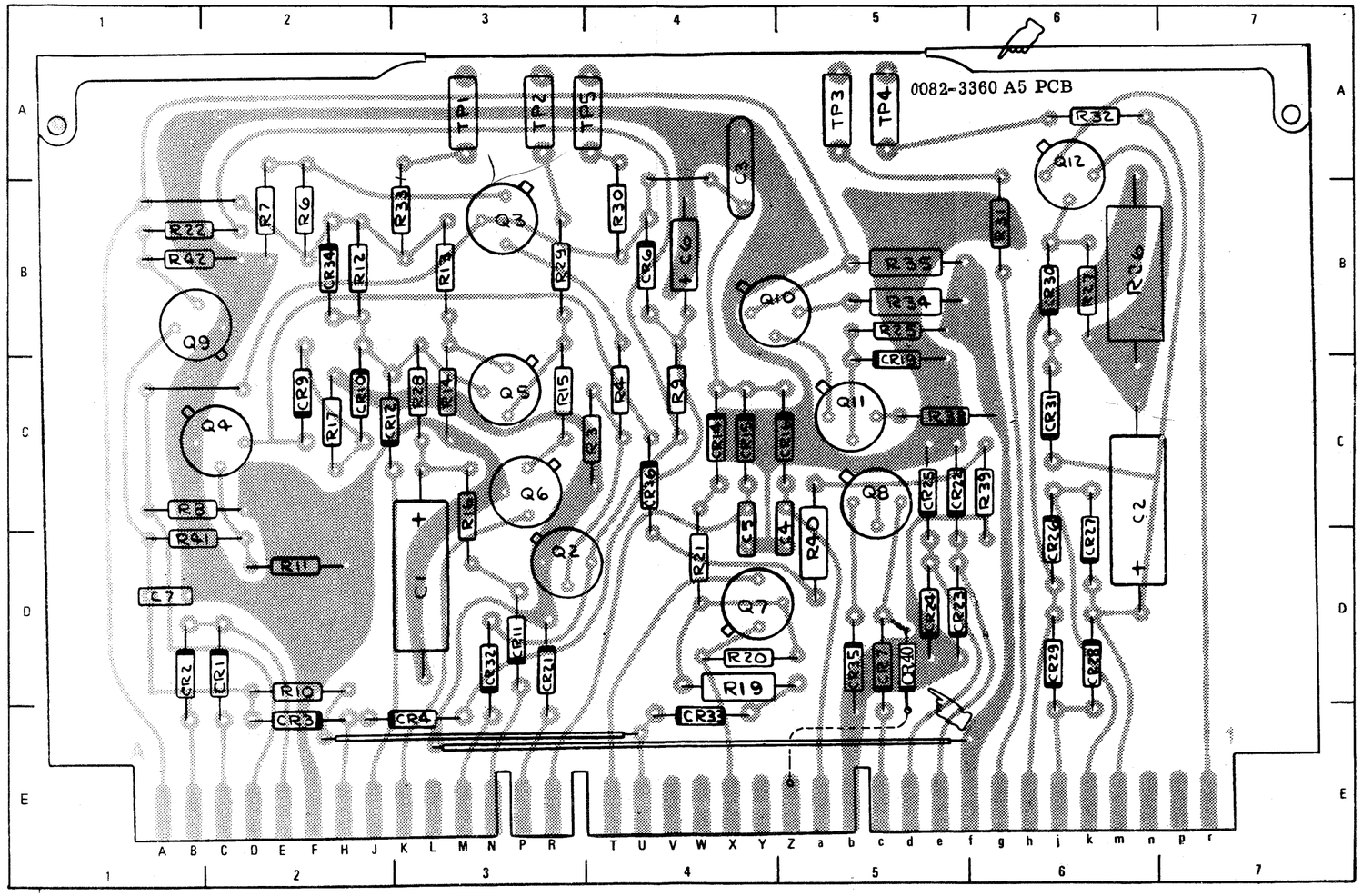
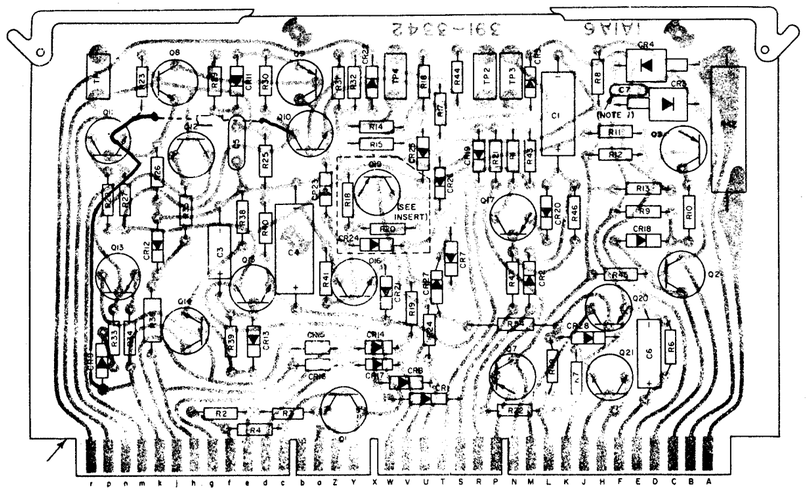


Figure 5-15A. DC Power Control PC Board Assembly 1A1A5, Component Locations Shows New 1A1A5 Assembly



CONFIGURATION FOR SERIAL NUMBERS A5 THROUGH A71. ALL OTHER UNITS ARE AS SHOWN

NOTE 1: Not used in units with serial numbers A1 through A206.

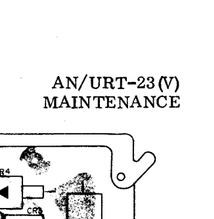
Foil Side

REF DESIG PREFIX
1A1A6

A - 160 VDC Input
B - 72 VDC Output
C - Keyer Input
D - Driver Bias Pot (+)
E - Bias Interlock
F - Negative Bias to T-827/URT
H - Bias to PA Grids
J - PA Bias Pot Output
K - Driver Bias Pot (-)
L - -72 VDC Input
M - PA Bias Pot Switched
N - GRD
P - Power Pot Return
R - +28 VDC
S - Tune Ground
T - +20VDC Carrier Insert
U - CW/FSK GRD
V - APC Output

PIN CALLOUTS

W - Chassis GRD
X - (X is slotted keyway)
Y - +11 Volts
Z - Interlock
a - Interlock
b - (not used)
c - Input Power Detector
d - 115 VAC
e - To Input Power Meter
f - Chassis Ground
g - 115 VAC
h - -160 VDC Output
j - APC Adjust
k - +20 VDC
:n - PPC Adjust
n - To Power Pot.
p - VSWR Bridge Output
r - PPC Output

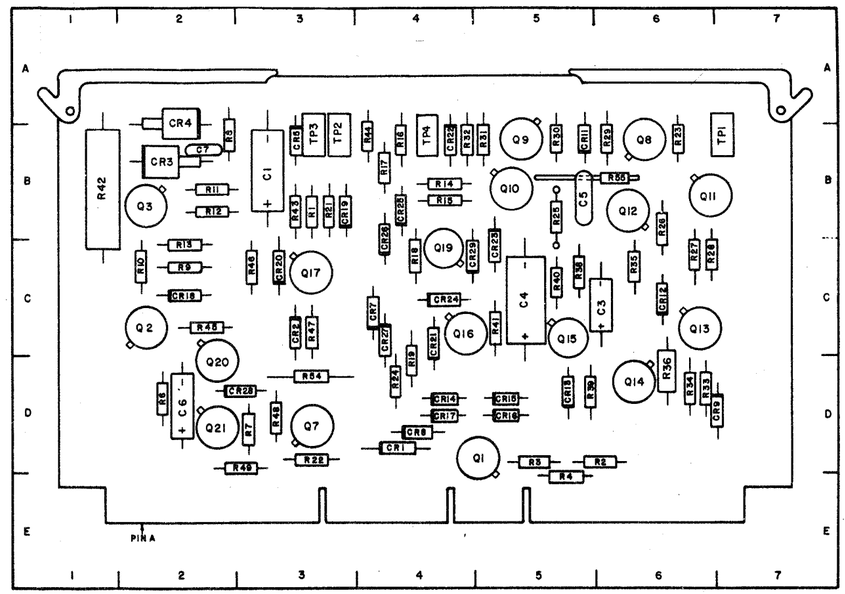


Printed Circuit Board 1A1A6, Component And Test Point Locations

PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
C1	3B	Q3	2B	R22	3D
C3	6C	Q7	3D	R23	6A
C4	5C	Q8	6A	R24	D
C5	5B	Q9	5A	R25	5B
C6	2D	Q10	5B	R26	6B
C7	2B	Q11	7B	R27	6C
		Q12	6B	R28	7C
CR1	D	Q13	7C	R29	6A
CR2	3C	Q14	6D	R30	5A
CR3	2B	Q15	5C	R31	5A
CR4	2A	Q16	C	R32	A
CR5	3A	Q17	3C	R33	7D
CR7	C	Q19	B	R34	6D
CR8	D	Q20	2D	R35	6C
CR9	7D	Q21	2D	R36	6D
CR11	5A			R38	5C
CR12	6C			R39	5D
CR13	5D	R1	3B	R40	5C
CR14	D	R2	6E	R41	5C
CR15	5D	R3	5E	R42	1B
CR16	5D	R4	5E	R43	3B
CR17	D	R6	2D	R44	B
CR18	2C	R7	2D	R45	2C
CR19	3B	R8	2B	R46	2C
CR20	3C	R9	2C	R47	3C
CR21	C	R10	2C	R48	3D
CR22	A	R11	2B	R49	2E
CR23	5C	R12	2B	R54	3D
CR24	C	R13	2C	R55	6B
CR25	B	R14	B		
CR26	B	R15	B	TP1	7A
CR27	C	R16	B	TP2	3A
CR28	2D	R17	B	TP3	3A
CR29	5C	R18	C	TP4	B
		R19	D		
Q1	5E				
		R21	3B		

AN/URT-23(V)
MAINTENANCE



REF. DESIG. PREFIX 1A1A6

COMPONENT SIDE

NOTE

On some production equipments R55 (zone 6B) is connected to contact k (+20 VDC) by a buss wire jumper passing through zones 2B, 2C, and 2D, instead of by copper (printed circuit) strip.

Printed Circuit Board 1A1A6, Component and Test Point Locations

PARTS LOCATION INDEX

REF DESIG	LOC	REF DESIG	LOC	REF DESIG	LOC
C1	3B	Q3	2D	R27	6C
C3	4A	Q7	3D	R28	6C
C4	4D	Q8	6B	R29	6A
C5	7C	Q9	6A	R30	6B
C6	2C	Q10	5A	R31	6A
C7	1B	Q11	6C	R32	5A
C8	2D	Q12	7D	R33	6D
C9	7C	Q13	6D	R35	7C
C10	5A	Q14	6C	R36	5C
		Q15	4C	R37	6D
CR1	3E	Q16	5B	R38	5B
CR2	3D	Q17	4C	R39	5C
CR3	1C	Q19	3B	R40	4D
CR4	1C	Q20	3C	R41	7B
CR5	2D	Q21	3D	R42	1D
CR8	5D	Q22	4A	R43	3B
CR9	6D	Q23	5C	R44	7B
CR10	5A	Q24	2B	R45	2C
CR11	6A			R46	3C
CR12	6C	R1	4C	R47	4D
CR13	5C	R2	5D	R48	3D
CR14	5D	R3	5D	R49	2E
CR15	6D	R4	5E	R54	3C
CR16	5D	R6	2E	R55	6B
CR17	5D	R7	3D	R56	7B
CR18	2D	R8	1C	R57	2C
CR19	4D	R9	2D	R58	5A
CR20	3C	R10	2D	R59	5A
CR22	5A	R11	3D	R60	5A
CR25	3A	R12	3D	R61	7C
CR26	4A	R13	2D	R62	6D
CR27	4B	R14	3B	R63	5C
CR28	2C	R15	4B	R64	5D
CR29	3B	R16	4A	R65	4C
CR31	2C	R17	2B	R66	4B
CR32	5B	R18	3B	R67	5B
CR34	6D	R19	2B	R68	5C
CR35	4B	R21	4D		
CR36	4C	R22	3D	TP1	7A
CR37	4B	R23	7E	TP2	7A
CR38	4B	R24	4C	TP3	3A
Q1	5D	R25	5B	TP4	3A
Q2	2D	R26	6B		

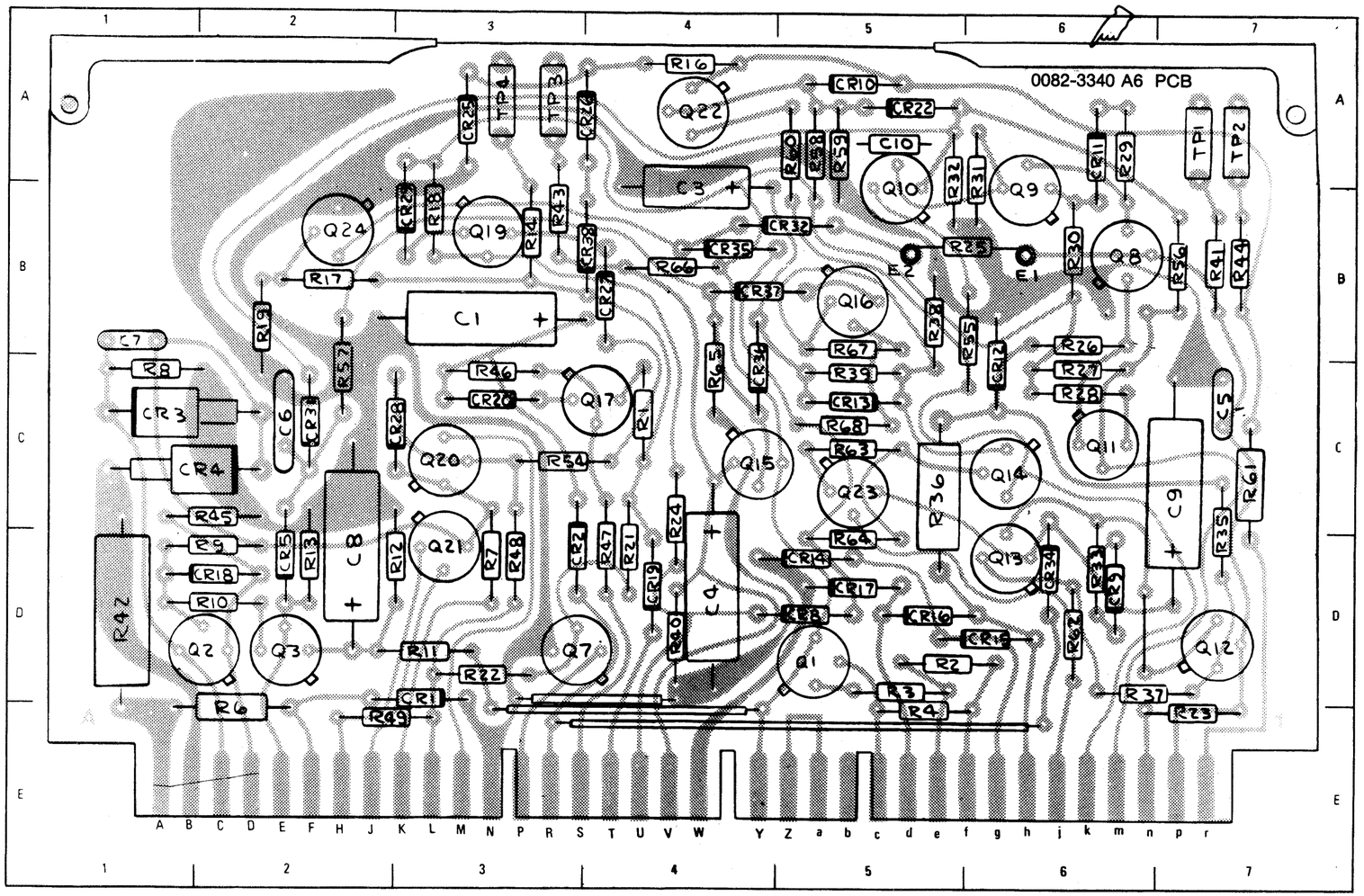
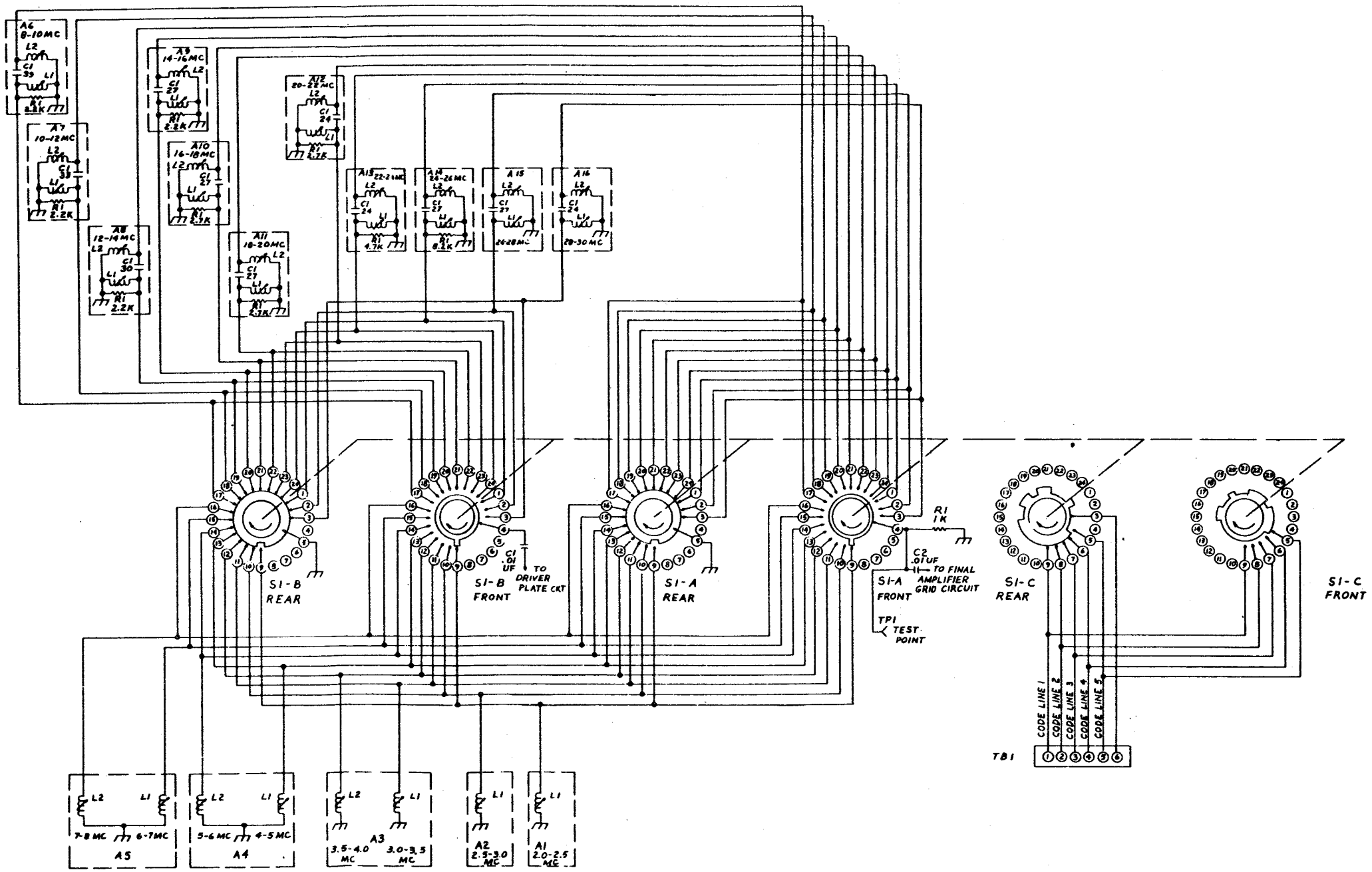


Figure 5-16A. APC-PPC PC Board Assembly 1A1A6, Component Locations Shows New 1A1A6 Assembly



NOTES:
1. UNLESS OTHERWISE INDICATED
   A. ALL CAPACITORS ARE IN PICOFARADS
   B. ALL RESISTORS ARE IN OHMS, 2W, 10% CARBON

FIGURE
Driver Transformer Assembly
1A1A4, Schematic Diagram

NOTES:

1 UNLESS OTHERWISE INDICATED ALL CAPACITORS ARE IN PICOFARADS AND RESISTORS ARE IN OHMS

2 SWITCH IS SHOWN IN 2.0-2.5 MC POSITION

3 ↓ INDICATES BLUE COLOR CODED TUNING SCREW
↑ INDICATES UNCODED SCREW
ARROWS INDICATE DIRECTION OF SLUG TRAVEL WITH CLOCKWISE ROTATION OF SCREW

4 PREFIX PARTIAL REFERENCE DESIGNATIONS WITH 1A1A2

5 * CONSISTS OF R1 THROUGH R4 IN PARALLEL, EACH 27K, 2W
** CONSISTS OF R5 THROUGH R8 IN PARALLEL, EACH 27K, 2W

6. **VALUES SHOWN FOR C28 ARE FOR ALL UNITS EXCEPT SERIAL #A3-A145, WHICH IS 1000 pf.**

7. **VALUES SHOWN FOR C38-C40 ARE FOR ALL UNITS EXCEPT SERIAL # A5, A6, A8 - A10, A13, WHICH IS 100 pf.**

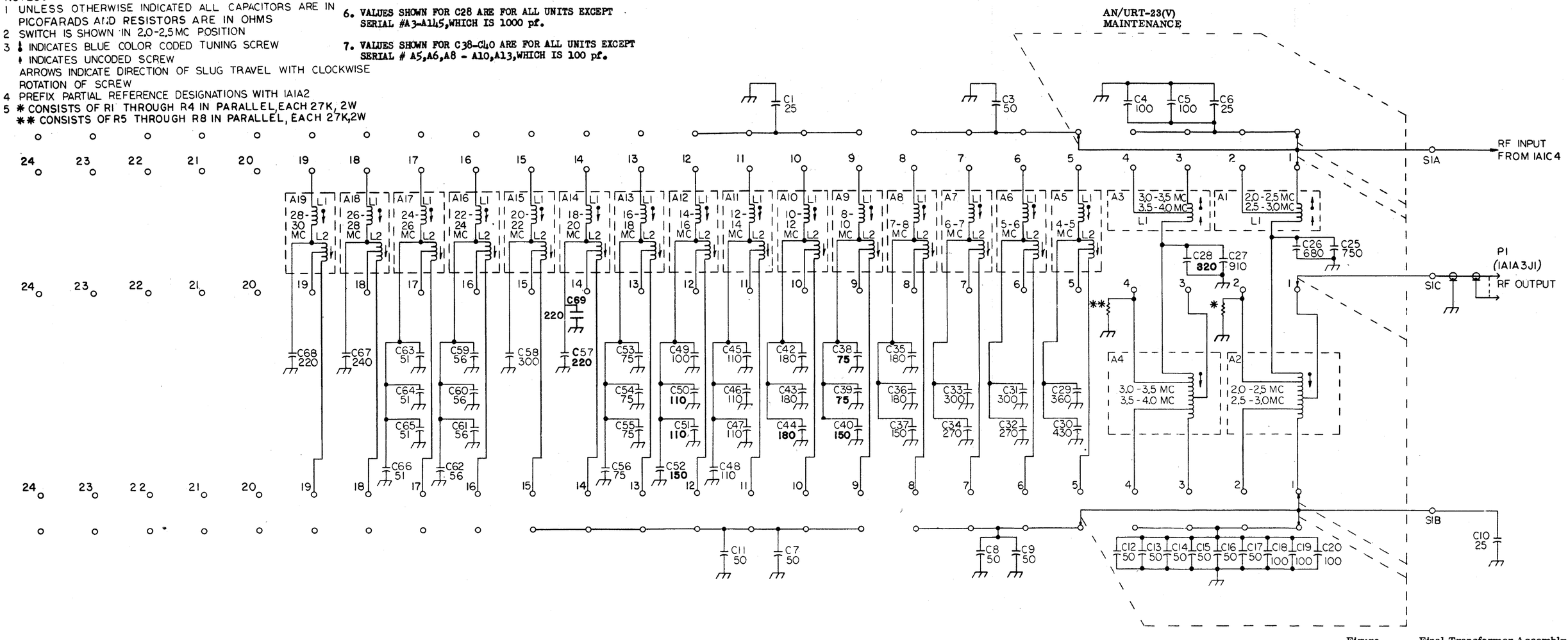
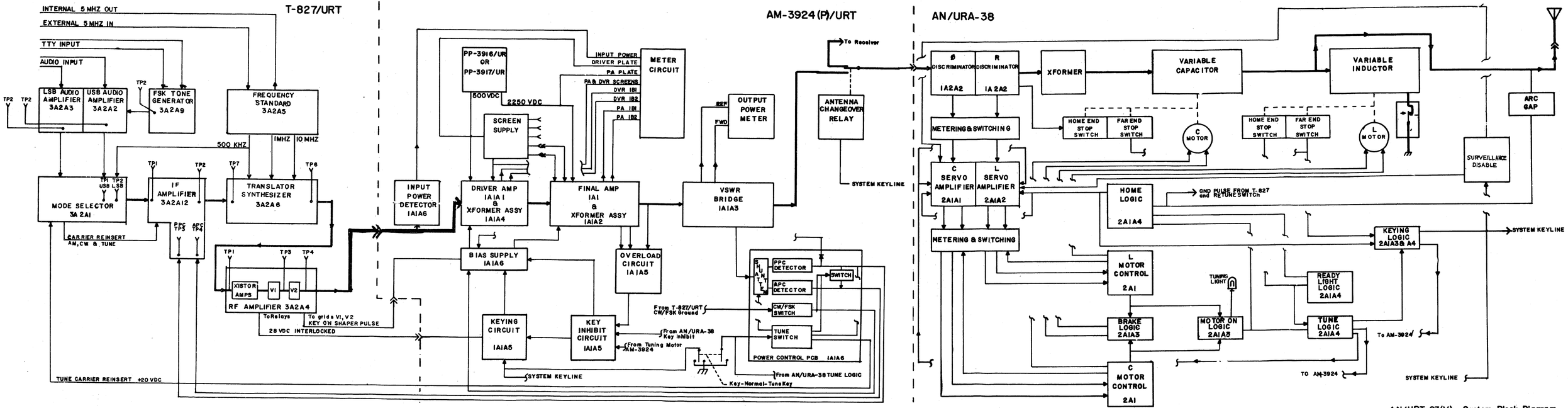


Figure **Final Transformer Assembly 1A1A2, Schematic Diagram**



AN/URT-23(V) System Block Diagram

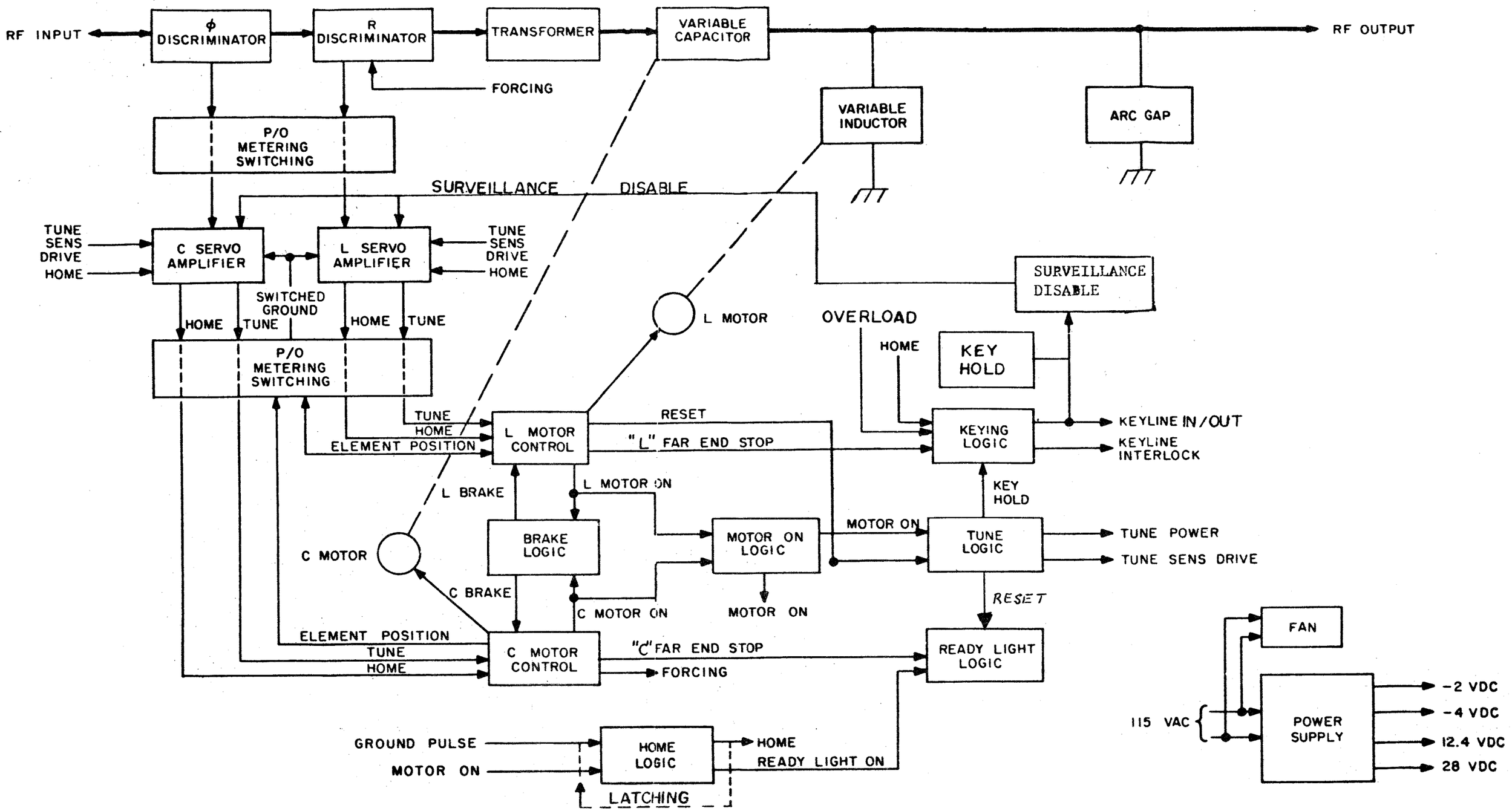


Figure Antenna Coupler Group
AN/URA-38, Functional Block Diagram

AM-6909/URT, Control Circuits